Manitoba
Energy and Mines
Geological Services

Mineral Deposit Series

Report No. 2

Mineral Deposits and Occurrences in the Flin Flon Area NTS 63K/13: Part II, Flin Flon Area (63K/13SW)

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Winnipeg, 1988

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TABLE OF CONTENTS

	Page
INTRODUCTION	1
Methodology	1
Format of mineral deposit maps	1
Format of mineral deposit reports	2
GENERAL GEOLOGY OF AREA 63K/13 SW	3
REFERENCES	3
INDEX MAPS: LOCATION OF MINERAL OCCURRENCES (63K/13 AND 13SW)	5
MINERAL DEPOSITS AND OCCURRENCES: FLIN FLON AREA	7
Location 1 (Flin Flon Mine)	7
Location 2 (Trout Lake Mine)	13
Location 36	19
Location 37	20
Location 38	21
Location 39	25
Location 40	26
Location 41	27
Location 42	29
Location 43	31
Location 44	33
Location 45	34
Location 47	35
Location 48	39
Location 49	41
Location 52	43
Location 53	45
Location 54	47
Location 55	49
Location 56	50
Location 57	51
Location 58	52
Location 59	53
Location 60	55
Location 61	57
Location 62	58
Location 63	61
Location 65	63
Location 76	65
Location 77	67
Location 81	68
Location 84	69
Location 90	71
Location 91	73
Location 92	75
Location 93	77
Location 94	79
Location 95	81
Location 96	83

Page

Location 97 (Callinan Deposit) 85
Location 125 89
Location 126 91
Location 127 92
Location 128 93
Location 129 94
Location 130 95
APPENDIX A: AIRPHOTO LOCATION OF OCCURRENCES (Locations 38, 47, 53 and 61) .96

FIGURES

Index Map 1: Mineral deposits and occurrences in the Flin Flon area, NTS 63K/13 5
Index Map 2: Mineral deposits and occurrences in the Flin Flon area (63K/13SW) 6
Figure 1-1: Geological setting of the Flin Flon Cu-Zn massive sulphide deposit 8
Figure 1-2: Surface and 355 metre level plans for the Flin Flon Mine 9
Figure 1-3: 915 metre level plan for the Flin Flon Mine 10
Figure 1-4: Vertical section (C-D) for the Flin Flon Mine 11
Figure 2-1: Geological setting of the Trout Lake Mine 14
Figure 2-2a: Plan of the Trout Lake Mine - North zone(115 m level) 15
Figure 2-2b: Plan of the Trout Lake Mine - North zone(240 m level) 15
Figure 2-3: Cross-section of Trout Lake Mine - South Zone 16
Figure 36-1: Geological setting of occurrences 36 and 37 18
Figure 37-1: Trench and sample locations at occurrence 37 20
Figure 38-1: Geological setting of occurrence #38 22
Figure 38-2: Main part of mineralized zone as defined by trenches and drill holes 23
Figure 39-1: Geological setting of occurrences 39 and 40 24
Figure 41-1: Geological setting of occurrence #41 28
Figure 42-1: Geological setting of occurrences 42 and 43 30
Figure 43-1: Detailed geology, and trench locations at occurrence 43 31
Figure 44-1: Geological setting of occurrences 44 and 45 32
Figure 47-1: Geological setting of occurrence #47 36
Figure 47-2: Drill hole locations at occurrence #47 37
Figure 48-1: Geological setting of occurrence #48 38
Figure 49-1: Geological setting of occurrence #49 40
Figure 49-2: Detailed geology, drill, trench and sample locations at occurrence #49 . . .41
Figure 52-1: Geological setting at occurrence #52 42
Figure 53-1: Geological setting of occurrence #53 44
Figure 53-2: Detailed geology, and trench locations at occurrence #53 45
Figure 54-1: Geological setting of occurrence #54 46
Figure 55-1: Geological setting of occurrences 55, 56, 57, 58, 59 and 60 48
Figure 55-2: Trench location at occurrence #55 49
Figure 56-1: Detailed geology and trench locations at occurrence #56 50
Figure 57-1: Trench locations at occurrence #57 51
Figure 58-1: North trench locations at occurrence #58 52
Figure 58-2: South trench locations at occurrence #58 52
Figure 59-1: Trench locations at occurrence #59 54
Figure 61-1: Geological setting of occurrences 61 and 62 56
Figure 61-2: Trench location at occurrence #61 57
Figure 62-1: Detailed geology, and trench locations at occurrence #61 58
Figure 63-1: Geological setting of occurrence #63 60
Figure 65-1: Geological setting of occurrence #65 62

Page

Figure 76-1: Geological setting of occurrence #76 64
Figure 76-2: Trench locations at occurrence #76 65
Figure 77-1: Geological setting of occurrence #77 66
Figure 81-1: Geological setting of occurrence #81 68
Figure 84-1: Geological setting of occurrence #84 69
Figure 90-1: Geological setting of occurrence #90 70
Figure 91-1: Geological setting of occurrence #91 72
Figure 92-1: Geological setting of occurrence #92 74
Figure 93-1: Geological setting of occurrence #93 76
Figure 94-1: Geological setting of occurrence #94 78
Figure 94-2: Detailed geology and sample locations at occurrence #94 79
Figure 95-1: Geological setting of occurrence #95 80
Figure 96-1: Geological setting of occurrence #96 82
Figure 97-1: Geological setting of the Callinan Deposit 84
Figure 97-2: Callinan South cross-section 86
Figure 97-3: Generalized cross-section of Callinan North 87
Figure 125-1: Geological setting of occurrence #125 88
Figure 126-1: Geological setting of occurrences 126, 127, 128, 129 and 130 90

MAP

MDS Map No. 2 (1988) Mineral deposits and occurrences
in the Flin Flon Area (63K/13 SW), Manitoba . . . . . in pocket

INTRODUCTION

This report and accompanying map (MDS Map No. 2) are part of a Mineral Deposit Series presenting a uniformly organized and up-to-date collation and analysis of information on mineral occurrences in the Province of Manitoba. The series is intended: (1) to provide explorationists with a geoscientific data base that can be used in mineral exploration; and (2) to provide a technical data base for other government users in resource evaluations, formulation of mineral and land use policies and the initiation of regional development programs.

METHODOLOGY

The documentation program was initiated in the main mining districts of the province under the 1984-1989 Mineral Development Agreement. Under this project mineral deposit geologists of the Geological Services Branch have attempted to inspect and evaluate each known mineral occurrence. These site visits ranged from a preliminary half day or less search of an area for old workings, to extensive geological mapping of selected occurrences for a week or more. Although a small number of occurrences were not located or were not visited, generally more than 95% were located and examined during this initial phase of the documentation.

In addition, for each occurrence the geologists have attempted to synthesize available data from published and unpublished sources. The Manitoba Mineral Inventory Card Index and the cancelled Assessment Files have been used extensively in the preparation of the report.

The information has been collated and maps prepared with the assistance of junior staff geologists and summer assistants. Senior mineral deposit geologists have provided the deposit classifications and text for the report.

Deposit versus Occurrence

Throughout this report mineralization is referred to as a *deposit* if tonnage and grade figures are known; all other mineralization is referred to as an *occurrence*. No attempt has been made to set lower limits for deposit sizes.

Massive Sulphide versus Solid Sulphide

The use of 'massive sulphide' in the geological literature is confusing in that it is not always clear whether the authors are referring to a 'massive sulphide deposit' (cf. Sangster, 1972) or a section of sulphide-rich rock. In this publication 'massive sulphide' will be used in reference to a *deposit type*, i.e. a volcanogenic massive sulphide deposit type, rather than the nature of the mineralization. A volcanogenic or sedimentogenic massive sulphide deposit can contain a sulphide lens that locally contains as little as 10% sulphide minerals by volume and the alteration zones that are an integral part of many sulphide deposits, or the only portion remaining, rarely contain more than 50% sulphide minerals. Consequently, the use of 'solid sulphide' for 90% - 100% and 'near solid sulphide' for 50% - 90% sulphide minerals is adopted in place of the commonly used term 'massive' to describe the textural aspects of a sulphide mineralization.

FORMAT OF MINERAL DEPOSIT MAPS:

Location:

One of the incentives spurring the mineral deposit documentation was the absence of accurate location maps for known mineral occurrences. Inaccurate land bases have previously resulted in failure to find old workings, surveys conducted in the wrong areas, and even cancellation of intended surveys by explorationists. Consequently, considerable field time has been spent in establishing occurrence locations and attempts have been made to display exact locations both on the Mineral Deposit Map and in the accompanying report.

The location number on the map is a unique reference number that will be used both in the reports and the geologists' unpublished data base. These numbers are consecutive within each 1:50 000 NTS map sheet (but not within portions of a map sheet such as a mineral deposit map MDS Map No. 2).

Deposit Types:

In order to maintain a mineral deposit classification, which will be useful to both explorationists and metallogeneticists, a simplified descriptive classification was selected. This classification is based on the use of common *deposit types* for the classification of both deposits and occurrences. The classification of mineralization is based on the premise that the mineral explorationist requires information on metals and types of mineralization in an area as well as on the *economic* deposits (past, present and future producers).

All deposits and occurrences are classified according to the Deposit Type classification in Table 1.

The deposit type displayed on the map represents the mineralization with the greatest economic potential, for example a disseminated narrow chalcopyrite layer is emphasized rather than a much thicker solid pyrite-graphite layer.

Mineralization:

A symbol is used to denote the percentage and/or type of mineralization present. At some localities more than one type of mineralization is present. The type of mineralization displayed in the symbol represents the mineralization with the greatest economic potential as indicated by the deposit type symbol.

TABLE 1. MINERAL DEPOSIT TYPES

STRATABOUND MASSIVE SULPHIDE TYPE DEPOSITS
- a) Volcanic rock-associated
- b) Sedimentary rock-associated
- c) Alteration zone associated with a or b

CHEMICAL SEDIMENT TYPE DEPOSITS
- a) Sulphide facies iron formation
- b) Oxide facies iron formation
- c) Carbonate facies iron formation
- d) Silicate facies iron formation
- e) Other chemical sediments

VEIN TYPE DEPOSITS
- a) Single vein
- b) Multiple veins or lenses
- c) Stockwork

MAGMATOGENIC TYPE DEPOSITS ASSOCIATED WITH MAFIC/ULTRAMAFIC ROCKS
- a) Disseminated
- b) Layered
- c) Net textured
- d) Podiform

DEPOSITS WITH PORPHYRY AFFINITIES
PEGMATITE TYPE DEPOSITS
CLASTIC SEDIMENT TYPE DEPOSITS
REPLACEMENT TYPE DEPOSITS
DISSEMINATED MINERALIZATION - NOT CLASSIFIED

Host Rocks:

In general, this description refers to the immediately underlying and overlying rock types. When a number of rock types are present in an extensive zone of mineralization, the most common rock types are indicated.

Elements:

This description allows for a maximum of three metals present in increasing order of abundance by volume. The precious and base metals are indicated, if present, in preference to elements such as iron and carbon.

In some instances it has been more efficient on the map and in the report to make reference to an area of mineralization rather than individual deposits or occurrences. All mineralization in the area delineated by a dotted line on the map is referenced in the report under the location number within that area.

FORMAT OF MINERAL DEPOSIT REPORTS

Location:

Each deposit or occurrence description will contain the unique deposit reference number, deposit or claim name where applicable, UTM coordinates, general area description, the reference number of the airphoto on which the deposit can be located and a brief description of method(s) of access. For those localities that were difficult to locate in the field the airphotos with locations are reproduced in appendix A.

Exploration History:

This section provides an idea of the extent of exploration. In general, it is a precis of the Mineral Inventory Card and the reader should reference the Mineral Inventory Card for further details.

Geological Setting:

In this section the general geology of a deposit or occurrence is described. The information levels of the descriptions vary considerably and are dependent largely upon the extent of geological mapping during the documentation project. For further details the reader should consult the references cited.

Mineralization:

A detailed description of the mineralization provides the readers with the opportunity to make their own evaluation of the significance of a mineral occurrence or deposit.

Geochemistry:

Assay and geochemical data are included in this section. Extensive geochemical data bases are referenced but not reproduced here.

Classification:

In this section the geologist may indicate the reasons for the classification appearing on the Mineral Deposit Map. For those localities containing more than one deposit type the deposit types not shown on the map are also documented.

References:

These include both published and unpublished sources. For published and assessment report information the reader should obtain desired material directly from the source. The mineral deposit geologists will endeavour to supply copies of unpublished material on a deposit by deposit basis.

Abbreviations:

H.B.E.D.	Hudson Bay Exploration and Development Company Limited
H.B.M.&S.	Hudson Bay Mining & Smelting Company Limited
A.F.	Assessment File
E.M.	electro-magnetic
M.I.	Mineral Inventory

NOTE: The Mineral Deposit report and the accompanying map are intended to be active documents that can be updated as new information becomes available. Although revisions of the publication are anticipated, any additional unpublished information may be obtained by contacting the authors or the Director, Geological Services Branch.

GENERAL GEOLOGY OF AREA 63K/13SW

The geological base for the mineral deposit map sheet 63K/13SW is derived from the one inch to one mile map of Tanton (1941) and the 1:20 000 scale maps of Bailes and Syme (1987), and Gilbert (1987). The area is underlain by volcano-sedimentary rocks of the Amisk Group and clastic sedimentary rocks of the Missi Group that have been intruded by pyroxenitic to granodioritic rocks. The Amisk Group consists predominantly of basaltic to andesitic flows and volcaniclastic rocks and felsic volcanic rocks of Proterozoic age (1886 ± 1.3 Ma., Syme et al., 1987). These are the main host rocks to mineralization in the Flin Flon area. The Missi Group metasedimentary rocks are fine- to very coarse-grained fluviatile sandstones and conglomerates that were derived in part from and deposited unconformably upon, the Amisk Group rocks.

The Flin Flon (63 M tonnes) and Callinan (2.4 M tonnes) massive sulphide deposits, which occur at approximately the same stratigraphic level, are associated with rhyolitic volcanic rocks that are up to 150 m thick. These rhyolitic rocks are underlain by mafic flows and breccias of the South Main basalt and overlain by porphyritic pillowed mafic flows of the Hidden Lake basalt (Bailes et al. 1987).

The 6.3 M tonne Trout Lake volcanogenic massive sulphide deposit is also associated with felsic volcanic rocks but its geological setting is somewhat different from that of most massive sulphide deposits in the Flin Flon area in that abundant argillite sedimentary rocks occur in the immediate vicinity of the deposit. Other occurrences in the map area that are hosted by similar sediment-dominated assemblages are #52 and #125*.

In the central portions of the map area the Cliff Lake porphyry, map unit 7ac, a high level composite intrusion, consists of a porphyritic tonalite and younger granitic quartz porphyry phases (Baldwin, 1980). This complex hosts a number of quartz vein type gold occurrences and locally the chloritic and propylitic porphyritic tonalite contains disseminations and veinlets of pyrite and chalcopyrite.

The gabbroic intrusion between Tartan and Ruby lakes is probably an extension of the gabbros that are associated with the Tartan Lake Mine (Gale and Ferreira, 1988). However, mineral occurrences #36 and 37 in this area are associated with a fault zone.

Bailes and Syme (1987) established that major lithologic and stratigraphic blocks in the southern half of this map sheet are fault controlled. The majority of the faults appear to postdate the main mineralizing events but locally these faults are loci for the mobilization of quartz, and minor amounts of gold and base metals (e.g. #40). No systematic studies of faulting and mineralization have been undertaken in this area.

* reference to Location #125.

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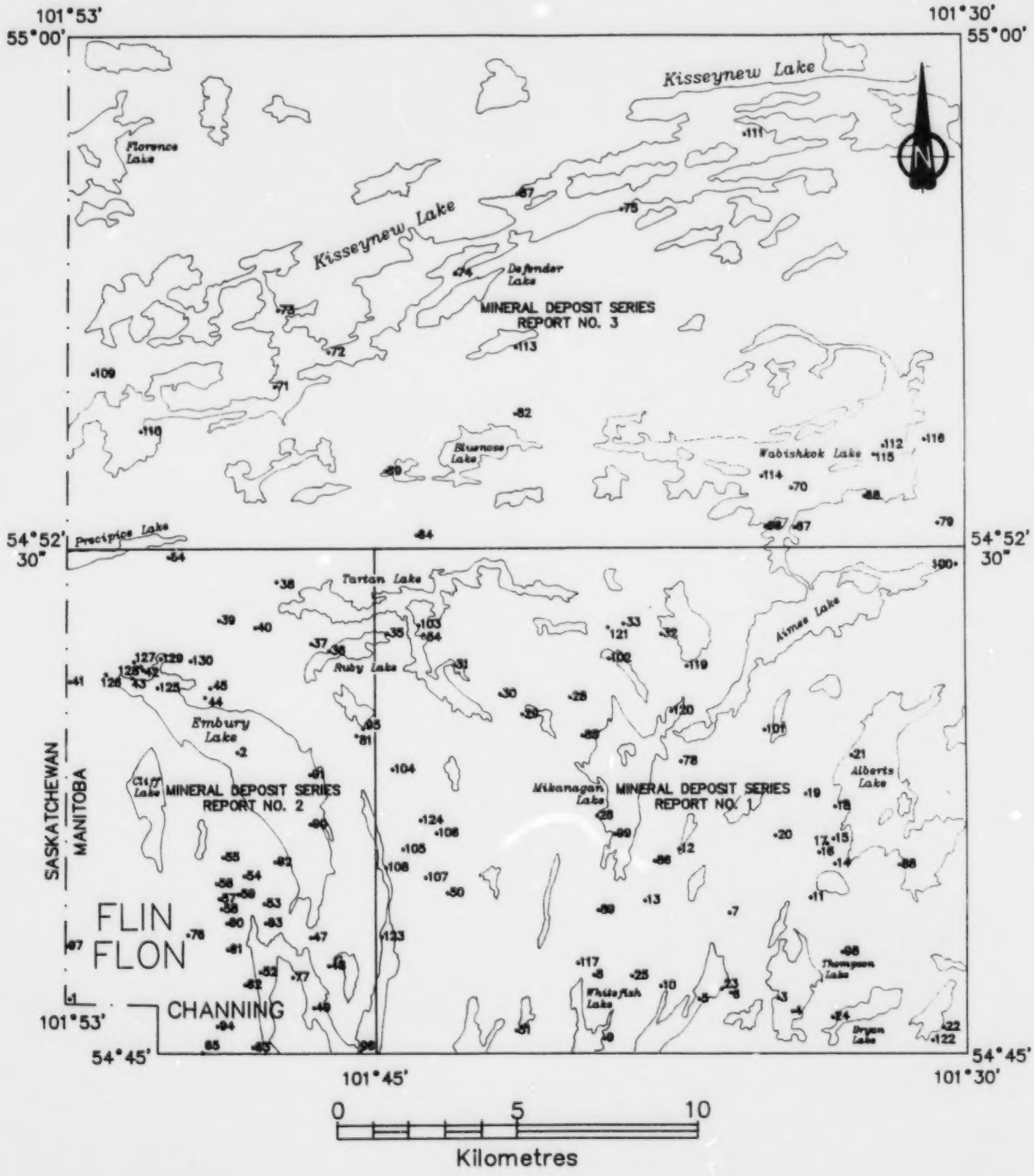
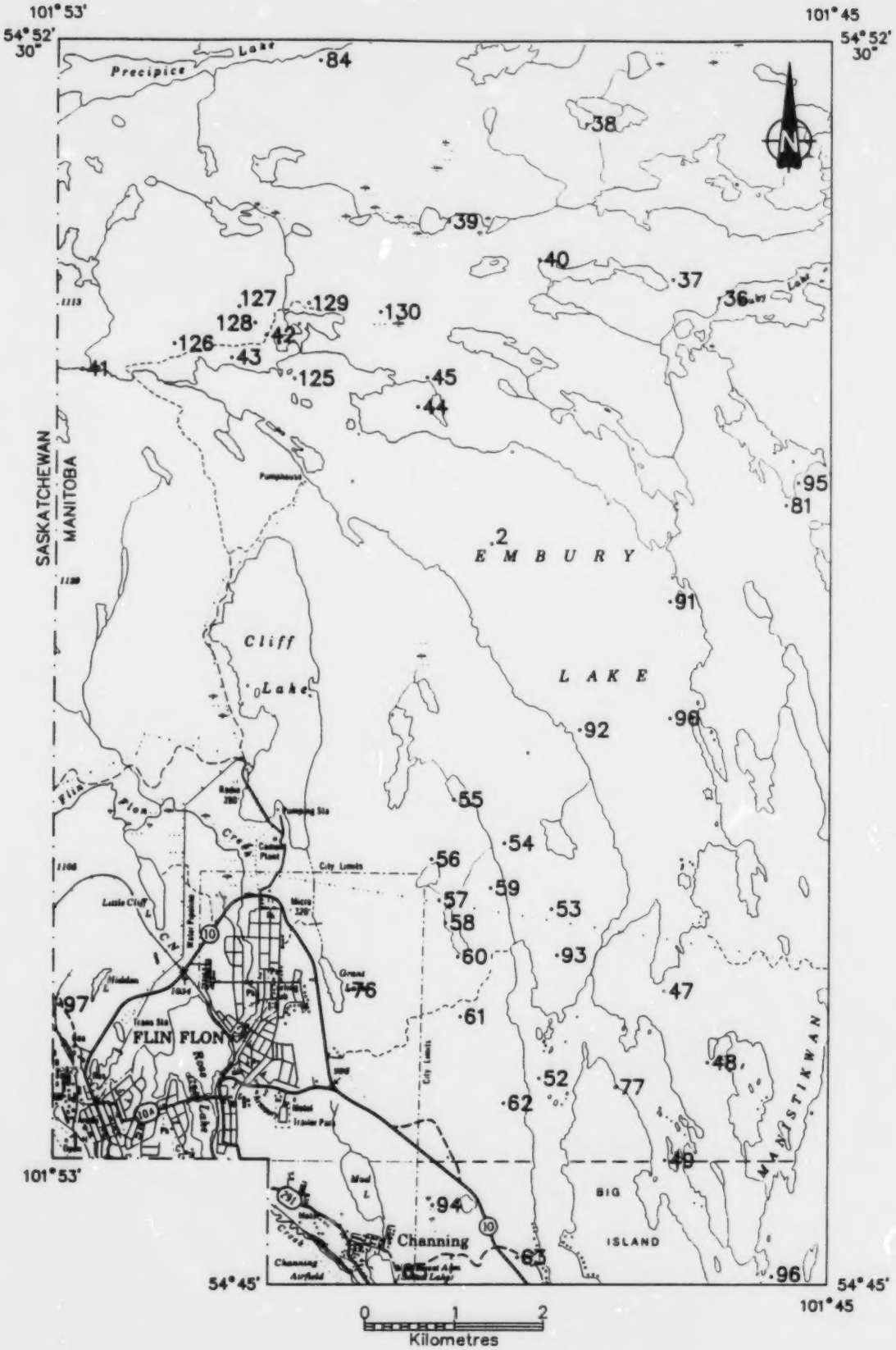
INDEX MAPS: LOCATION OF MINERAL DEPOSITS AND OCCURRENCES (63K/13 AND 13SW)



Index Map 1: Mineral Deposits and Occurrences in the Flin Flon Area, NTS 63K/13.



Index Map 2: Mineral Deposits and Occurrences in the Flin Flon Area (63K/13SW).

MINERAL DEPOSITS AND OCCURRENCES: FLIN FLON AREA (63K/13SW)

LOCATION: 1 NAME: Flin Flon Mine
UTM: 6072166N/314621E AREA: Town of Flin Flon AIRPHOTO: A26364-86

ACCESS:

Via Highway 10 to Flin Flon.

EXPLORATION SUMMARY:

In 1914 John Collins, a local Indian, showed Thomas Creighton, a trapper-prospector, mineralization on the shore of a lake that was later named Flin Flon Lake. In 1915 Thomas Creighton and Jack Mosher staked the Unique and Apex claims on the deposit. Ore reserves of 16 M tonnes averaging 2.54 g/tonne Au, 35.66 g/tonne Ag, 1.69% Cu and 3.49% Zn had been delineated by 7825 m of drilling in 44 holes by the end of 1918 (Wallace, 1920).

The property was optioned to a number of interests but the ore proved too complex for metallurgical treatments. In 1925 the Whitney Mining Corp. optioned the property and R.C. Channing worked on the metallurgical problems. In 1927 the Whitney Mining Corp. and Newmont Mining Corp. created Hudson Bay Mining and Smelting Co. (H.B.M.&S.).

The open pit began production in 1930 and two shafts were completed in 1931. The open pit ceased operation in 1940. The South Main shaft was sunk to a depth of 1242 m. An internal shaft was sunk to a depth of 1921 m at the south end of the mine.

Since 1976 production from the Flin Flon mine has come mainly from remnants of ore previously considered not of economic value and pillars. Reserves as of January 1, 1988 were 450 000 tonnes and the deposit should be exhausted by late 1989 (see also Mineral Inventory Card Cu3, 63K/13).

GEOLOGICAL SETTING:

The general geology of the Flin Flon Mine is shown in Figure 1-1. (Bailes et al. 1987), Stockwell (1960), Byers et al. (1965), and Price (1977) and Bailes and Syme (in prep.) describe the general geology of the Flin Flon Mine area.

The Flin Flon orebodies were deposited during a period of felsic volcanic activity that postdates the underlying South Main basaltic rocks and predates the overlying Hidden Lake basaltic sequence (Bailes et al., 1987).

The immediate footwall to the Flin Flon ore deposits is a 200-300 m thick sequence of pillow fragment breccia that overlies a thick sequence of pillowed flows (Fig. 1-1). North of the deposit a mafic crystal-lapilli tuff unit occurs between the pillowed flows and the pillow breccias. This indicates a volcanic source to the south of the South Main shaft (Bailes et al., 1987). Large sized amygdales and radial pipe vesicles near the South Main shaft, bomb structures(?) and flow-top breccias southwest of the South Main shaft and bomb structures to the northwest indicate that not only were parts of the South Main basalt unit deposited in shallow water (Bailes et al., 1987) but locally the volcanism was subaerial.

Several large bodies of rhyolitic rocks that cut across the footwall basalts and include pumice breccia, flow banded and massive rhyolite are high level rhyolite domes that appear to be related to the rhyolitic flows associated with the ore deposits (Bailes et al., 1987).

Rhyolitic rocks were extruded prior to and following the deposition of the solid sulphide lenses (Fig. 1-2). Rhyolite clasts in debris flows stratigraphically overlie the rhyolite flows and sulphide deposits represent the end of the felsic volcanic activity; these debris flows appear to be stratigraphically equivalent to similar rocks at Mill Rock Hill (Gale et al., 1982).

The subaqueous Hidden Lake basaltic rocks, which have a thickness of at least 3.3 km, are compositionally different from the South Main basalts that locally directly underlie them.

The Missi conglomerates and arkosic sandstones unconformably overlie a regolith developed on the Hidden Lake volcanic rocks. The boundary intrusions (meladiorite, leucodiorite to granodiorite, and wehrlite-olivine gabbro; Fig. 1-2) intrude both the sedimentary and volcanic rocks (Syme and Forester, 1977).

MINERALIZATION:

The host rocks to the Flin Flon ore deposits are of rhyolitic composition (Byers et al., 1965; Koo and Mossman, 1975a; Price, 1977; Bailes et al., 1987). This Mine rhyolite has a maximum thickness of 150 m and consists of a basal breccia zone with small, less than 2 mm, quartz and feldspar phenocrysts, a central zone of massive and flow breccia rhyolite with greater than 2 mm sized, quartz and feldspar phenocrysts, and an upper zone of flow breccia rhyolite with blocks of flow banded rhyolite in a matrix of angular to subangular rhyolite fragments (Bailes et al., 1987).

The deposit contained six lenticular orebodies with variable sizes that had an average length along strike of 275 m, a thickness of 20 m and a length of 750 m along the plunge (Fig. 1-2). Approximately 70% of the ore was derived from solid sulphide lenses and 30% from zones of disseminated sulphide adjacent to the solid sulphide lenses. An extensive zone of alteration associated with the deposit (Geology staff and Stockwell, 1957; Byers et al., 1965; Sangster, 1972; Koo and Mossman, 1975b) has dimensions in excess of 0.5 x 1.0 x 2 km.

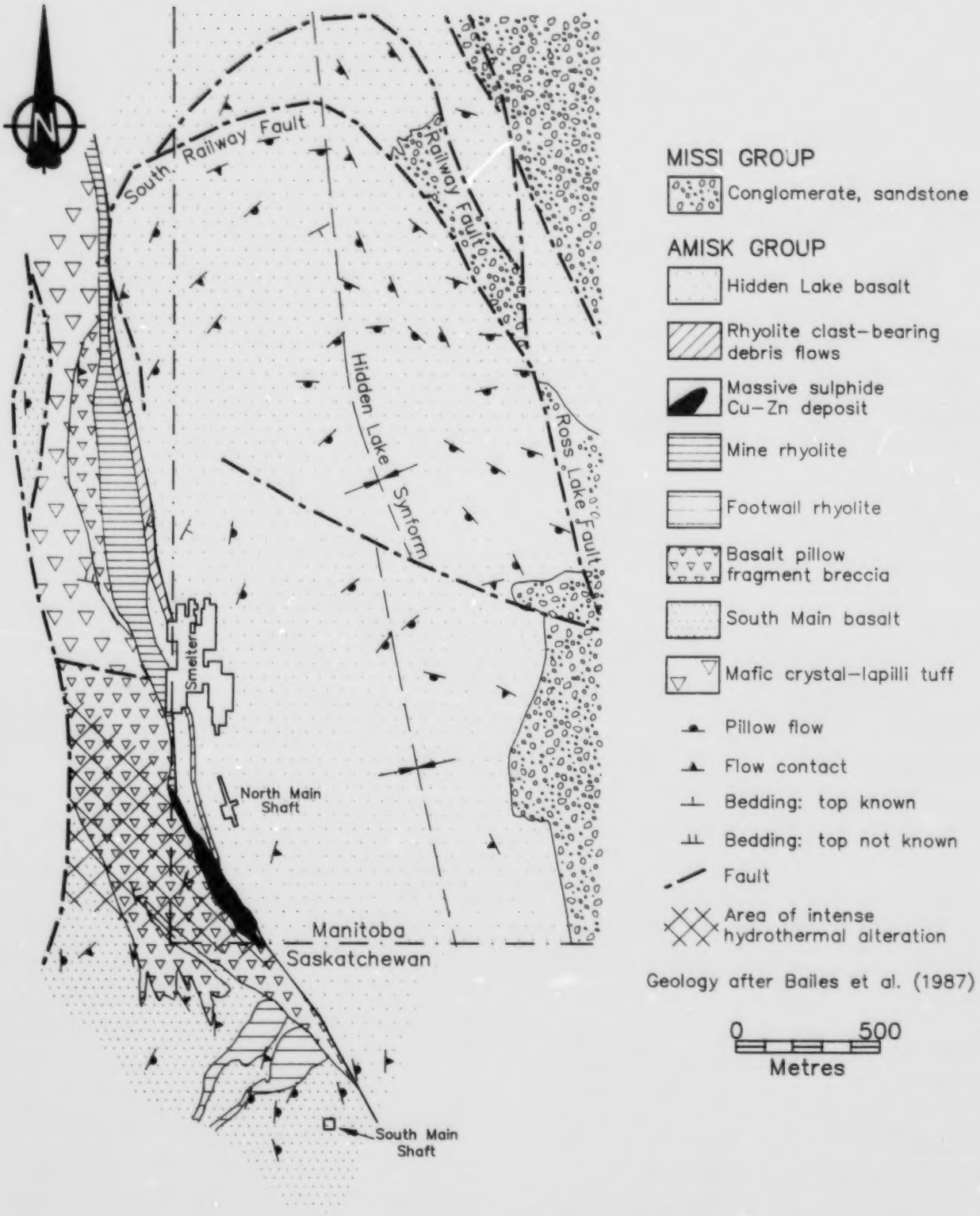


Figure 1-1: Geological setting of the Flin Flon Cu-Zn massive sulphide deposit (#1 - 63K/13SW).

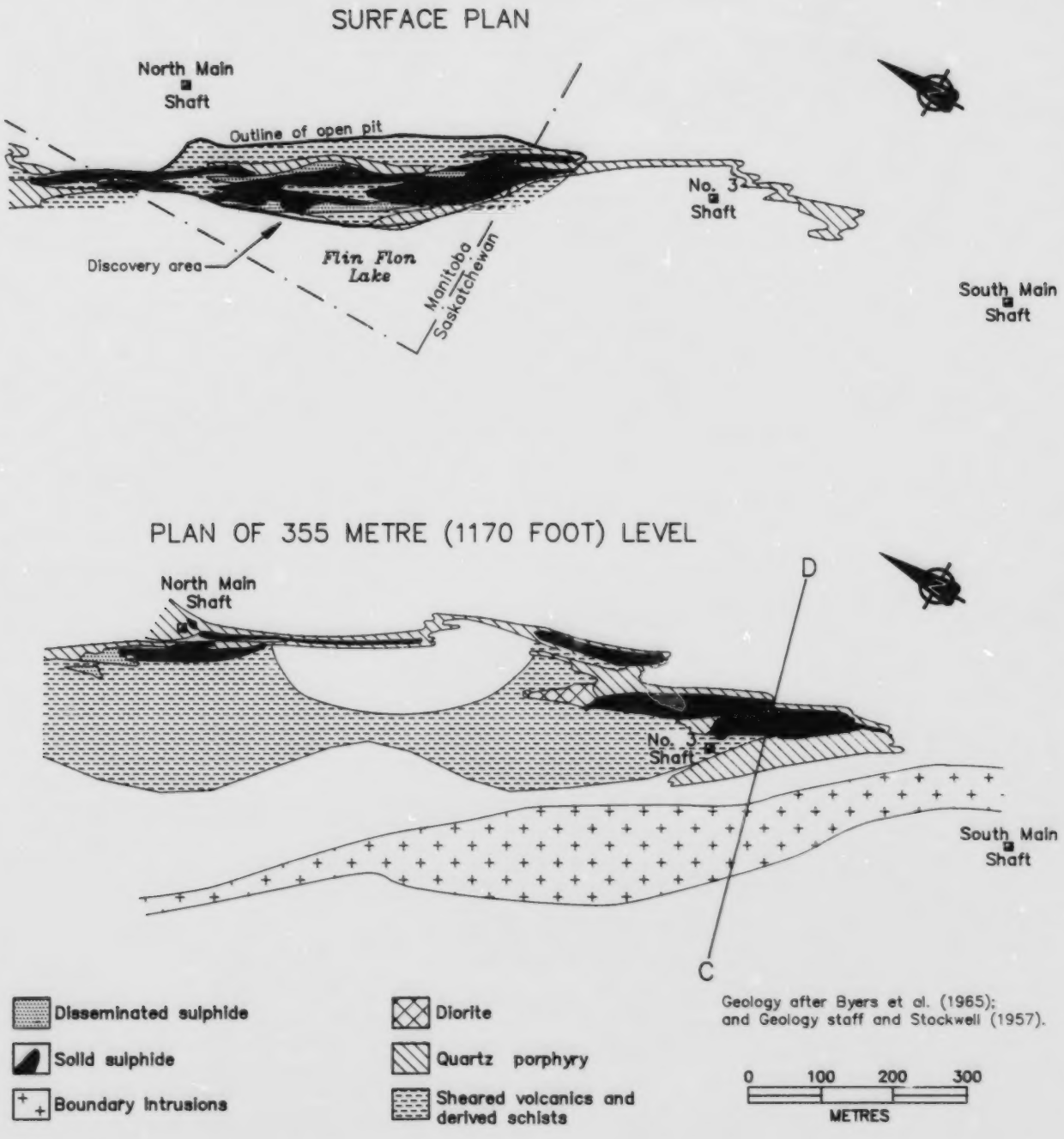


Figure 1–2: Surface and 355 metre level geological plans for the Flin Flon Mine.

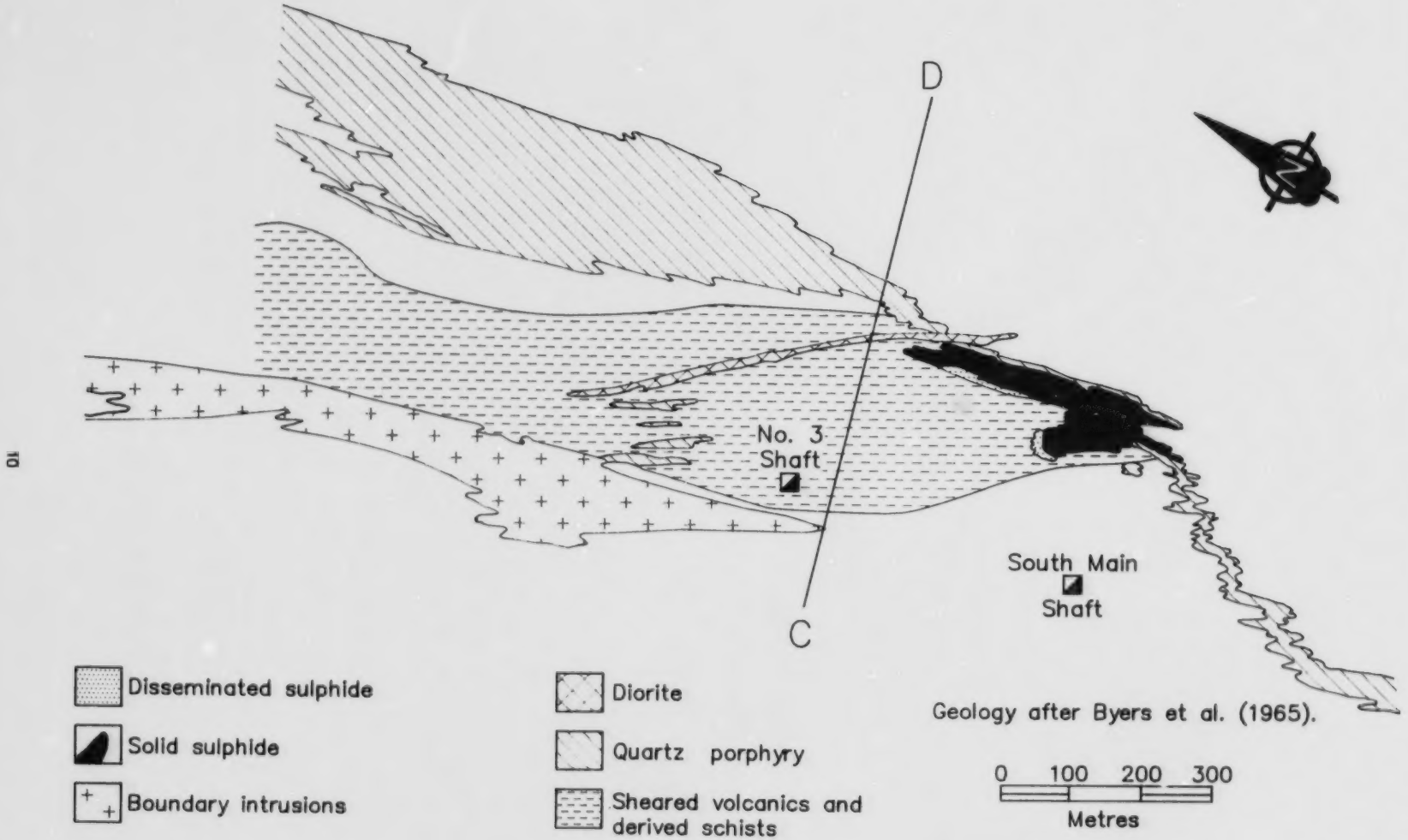


Figure 1–3: 915 metre (3000 foot) level geological plan for the Flin Flon Mine.

The solid sulphide lenses are commonly banded and mineralogically zoned with copper increasing towards the footwall and zinc increasing towards the hanging wall. The most common minerals are pyrite, pyrrhotite, sphalerite, and chalcopyrite. Minor minerals include cubanite, galena, tetrahedrite, tennantite, sylvanite, tetradymite, altaite, magnetite, electrum and gold.

Some of the sulphide lenses have been deformed by southeast-plunging minor folds and the plunge of the sulphide lenses (Fig. 1-3, 1-4) are parallel to the plunge of the minor folds (Geology staff and Stockwell, 1957, Byers et al., 1965).

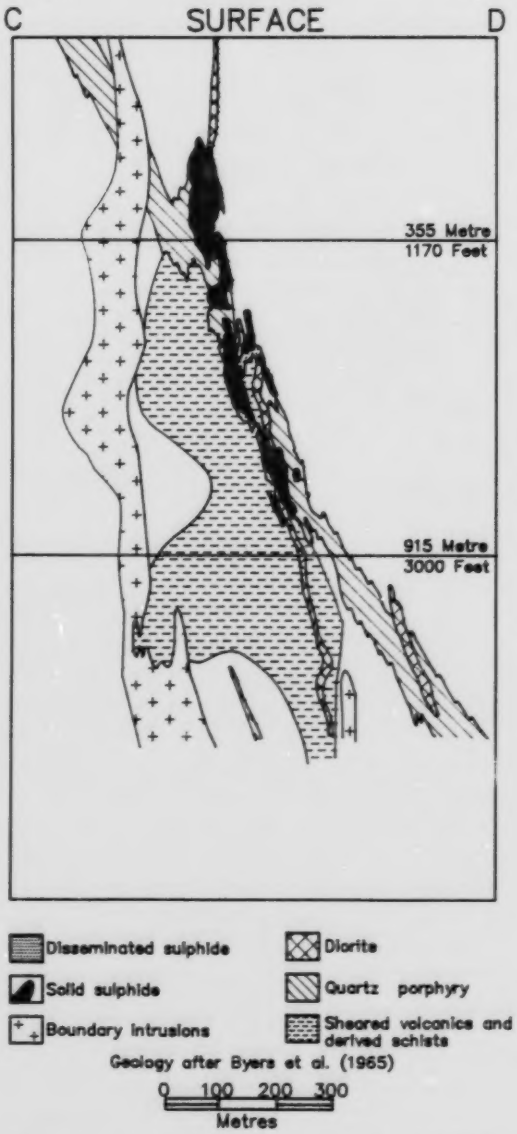


Figure 1–4: Vertical section (C–D) for the Flin Flon Mine.

GEOCHEMICAL DATA:

The Flin Flon Mine contained 63 million tonnes of ore with an average grade of 2.6 g/tonne Au, 41.5 g/tonne Ag, 2.17% Cu and 4.1% Zn.

A geochemical study conducted by Koo and Mossman (1975a) utilized 92 assays for Au, Ag, Cu and Zn from the solid sulphide zones and 80 samples of solid and disseminated sulphides that were analyzed for Fe, Cu, Zn, Pb, Mn, Cd, Ni, Co, Te, Sb, Vi, Ag, Au and insoluble residue. This study confirmed the enrichment of sphalerite, galena, tetrahedrite and electrum relative to chalcopyrite in the hanging wall of the ore lenses. In addition, there is a close association between Zn and Ag-Au in the solid sulphide ores and an increase in the amount of Cu relative to Zn, Ag and Au with increasing depth in the mine.

Twenty samples of lavas from outside the mine were analyzed by Stauffer et al. (1975) who suggested an island arc origin for the volcanic rocks. Seventeen samples of altered rocks from the mine analyzed for major elements indicated a depletion in SiO_2, K_2O and Na_2O and a increase in MgO, CaO, CO_2, H_2O relative to the 'typical' lavas (Koo and Mossman, 1975b).

Forty-seven analyses of volcanic rocks from the general vicinity of the Flin Flon mine were reported by Mwanang'Onze (1975).

A detailed geological and geochemical analysis of the rocks in the area will be presented in a forthcoming publication by Bailes and Syme (in prep.).

CLASSIFICATION:

A volcanogenic massive sulphide deposit containing several lenses of solid sulphide mineralization, disseminated sulphide mineralization and an extensive zone of hydrothermally altered rocks.

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1975: Stratigraphy and petrochemistry of the host rocks of copper-zinc deposits in the Flin Flon-Snow Lake greenstone belt; unpublished Ph.D. thesis, University of Manitoba, 420 p.

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1971: The Precambrian geology of northern Saskatchewan and Manitoba, Canada; unpublished Ph.D. thesis, University of Saskatchewan, 161 p.

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1977: Flin Flon-Snow Lake Geology; Canadian Institute of Mining and Metallurgy Tour Guide; Hudson Bay Mining and Smelting Co., Ltd., Flin Flon, Manitoba, 55 p.

Sangster, D.F.
1972: Precambrian volcanogenic massive sulphide deposits in Canada: a review; Geological Survey of Canada, Paper 72-22, 44 p.

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1977: Petrogenesis of the Boundary Intrusions in the Flin Flon areas of Saskatchewan and Manitoba; Canadian Journal of Earth Sciences, 14, p. 444-455.

Stockwell, C.H.
1960: Flin Flon-Mandy area, Manitoba and Saskatchewan; Geological Survey of Canada Map 1078A, Ottawa.

Wallace, R.C.
1920: Mining and mineral projects in northern Manitoba; Government of Manitoba, Northern Manitoba Bulletin, p. 22-24.

LOCATION: 2
UTM: 6078635N/319524E

NAME: Trout Lake Mine
AREA: Central Embury (Trout) Lake

AIRPHOTO: A26397-221

ACCESS:

Via Trout Lake Mine road from Flin Flon.

EXPLORATION SUMMARY:

Claims were staked around the shore of Embury Lake in 1948 and three drill holes drilled from the shoreline (A.F. 90467). An E.M. and a magnetometer survey were conducted over the lake. The claims were optioned to H.B.E.D. in 1949 and an E.M. survey conducted (A.F. 90466). Both surveys detected an anomaly at the deposit location but drilling was not undertaken and the claims lapsed in 1954. Claims were staked over the deposit in 1965 and 1969 but exploration was not undertaken and the claims were cancelled in 1971.

In 1974 Granges Exploration AB staked claims over the lake and contracted an E.M. survey to Questor Surveys. The Trout Lake orebody was discovered in 1976 and began production in 1982 (See M.I. Card 63K/13, Cu12).

GEOLOGICAL SETTING:

The ore deposit is located towards the centre of Embury Lake (Fig. 2-1) and consequently the only information available is from underground workings and drill cores. The information contained here has been extracted entirely from a detailed report by Ko (1986). The general geology of the mine is shown in Figure 2-1.

The ore lenses occur in a sericitized quartz-phyric fragmental rhyolite that is up to 210 m thick. A 10-50 m thick mafic flow stratigraphically overlies the host rock and is in turn overlain by a fragmental rhyolite similar to the host rock. Graphitic argillite underlies and overlies the fragmental rhyolitic rocks. The footwall graphitic argillite (90-120 m thick) is a black, very fine grained, laminated and sheared rock with sparse, thin, fine grained bands of pyrite. It is intercalated with cherty and dacitic tuffaceous lenses.

The host rock to the sulphide deposits, 140-210 m thick, has sharp contacts and consists mainly of felsic lapilli sized fragments and 1-2.5 mm quartz crystals in a fine grained sericitized rhyolitic tuffaceous matrix. Fragments up to 15 cm in diameter occur near the base of this unit.

The mafic "flow" is an amygdaloidal 10-50 m thick andesitic rock; it separates the host rock fragmental rhyolite from the similar hanging wall fragmental rhyolite. Towards the stratigraphic top of the hanging wall fragmental rhyolite the fragments decrease in size and some graphitic argillite fragments occur.

The hanging wall graphitic argillite, up to 600 m thick, is similar to the footwall graphitic argillite. Locally it contains 10-70 cm thick feldspathic sandstone layers with minor fragments of the graphitic argillite.

Fine- to medium-grained quartz-phyric diorite and gabbro sills and dykes occur in several places throughout the mine.

MINERALIZATION:

The Trout Lake Mine consists of two main ore zones that are 500 m apart along strike (Fig. 2-1). Both ore zones consist of several lenses of solid sulphides and/or zones of alteration. The orebodies consist of approximately 50% by volume of solid sulphide and 50% of stringer and disseminated sulphides in alteration zones.

The North Zone contains at least two solid sulphide lenses (Fig. 2-2). The solid sulphide lenses consist mainly of pyrite and sphalerite and have some chalcopyrite-rich sections. The chalcopyrite stringer ore is associated with carbonate-rich chlorite schist and chloritized rhyolite.

The South Zone contains at least four lenses of solid sulphide. It has a strike of 325°, a dip of 50-60° northeast and a plunge of 50-55° to the southeast. The No. 1 lens has a strike length of 100 m and an average thickness of 7 m.

The solid sulphide ore contains sphalerite-rich ore, pyrite-chalcopyrite ore and minor chalcopyrite-rich ore and is underlain by a chalcopyrite stringer ore in carbonate-rich chloritized fragmental rhyolite. The No. 2 lens consists mainly of pyrite-sphalerite and pyrite. The No. 3 lens contains chalcopyrite-rich, sphalerite-rich, pyrite-sphalerite and pyrite-chalcopyrite layers or lenses. The No. 5 lens consists mainly of a 3-5 m thick sphalerite-rich layer with minor galena and a 2-3 m layer of pyrite (Fig. 2-3).

The solid sulphide lenses also contain minor amounts of pyrrhotite, galena, arsenopyrite, magnetite, tetrahedrite and electrum.

The solid sulphide lenses generally exhibit an overall stratigraphic zonation with chalcopyrite-rich sections near the footwalls and sphalerite contents increasing towards the hanging walls; locally, reversals of this zonation were noted (Ko, 1986).

GEOCHEMICAL DATA:

The North Zone contained 2.45 M tonnes of 2.16 g/tonne Au, 16.8 g/tonne Ag, 2.60% Cu, 6.2% Zn to the 500 m level.

No. 1 lens contained 443 000 tonnes of 1.30 g/tonne Au, 13.03 g/tonne Ag, 2.22% Cu and 4.0% Zn. No. 2 lens contained 2.0 M tonnes, 2.37 g/tonne Au, 17.49 g/tonne Ag, 2.69% Cu, 7.4% Zn.

The South Zone contained 3.6 M tonnes (to the 420 m level) of 1.37 g/tonne Au, 15.09 g/tonne Ag.

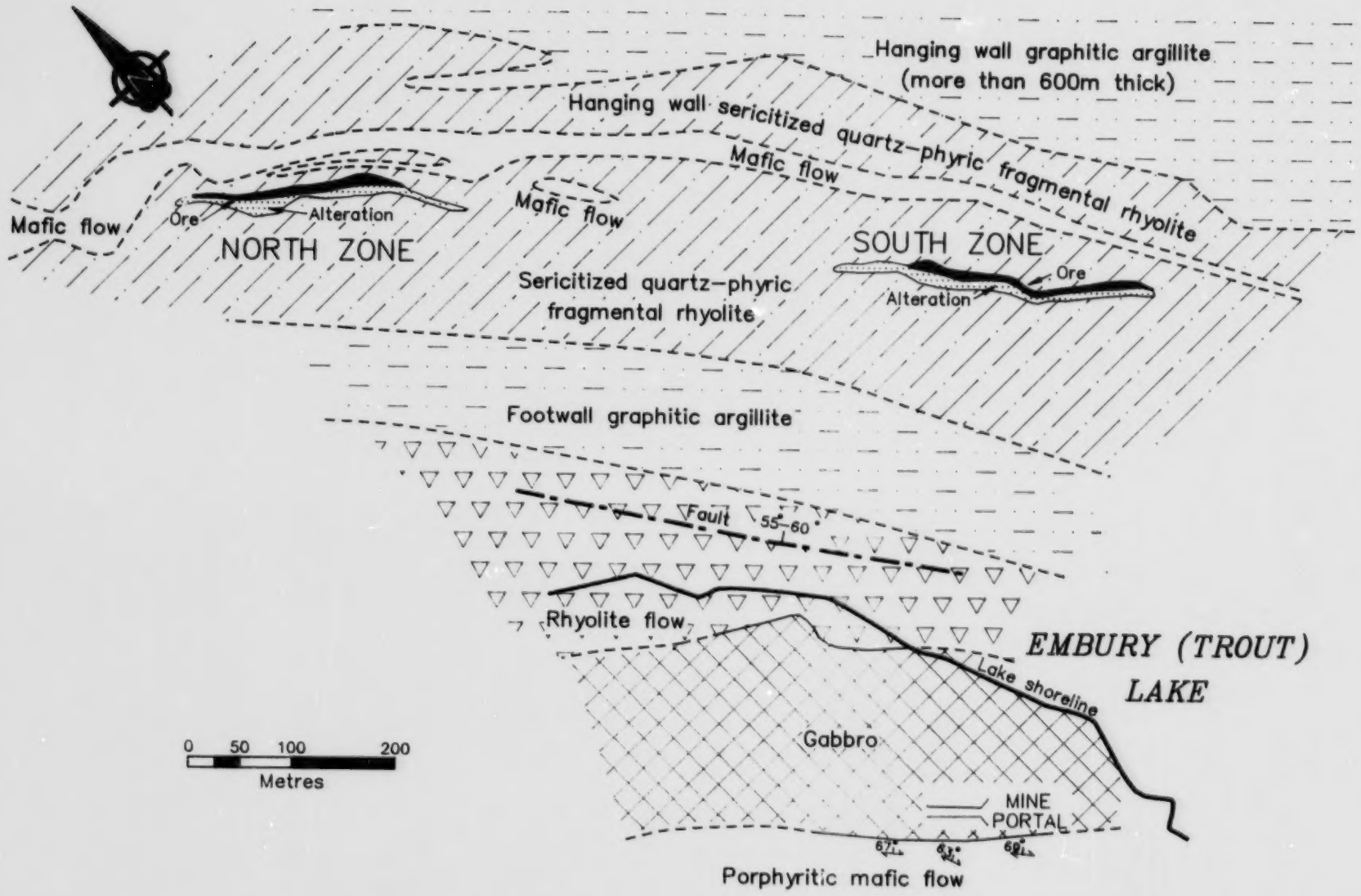

Figure 2–1: Geological setting of the Trout Lake Mine (#2 – 63K/13SW), after Ko (1986).

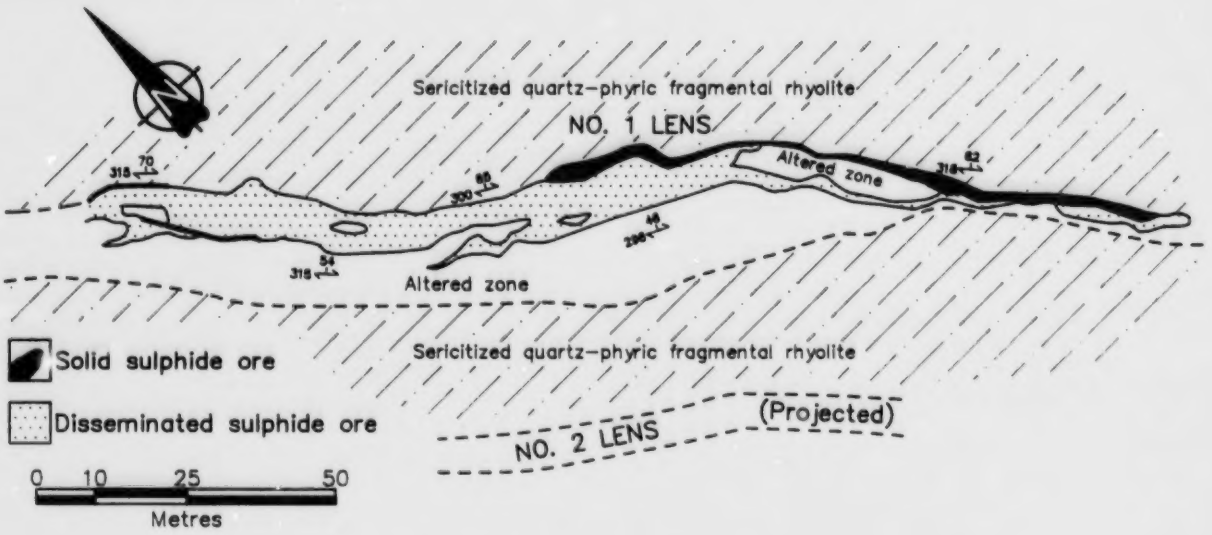

Figure 2–2a: Plan of the Trout Lake Mine – north zone (115 metre level).

Geology after Ko, 1986.

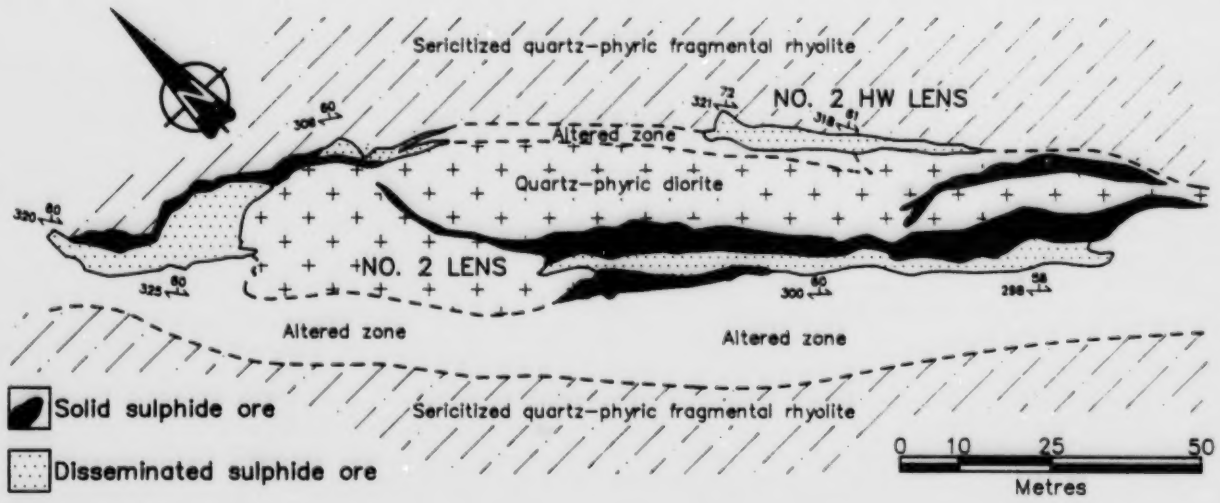

Figure 2–2b: Plan of the Trout Lake Mine – north zone (240 metre level).

Geology after Ko (1986)

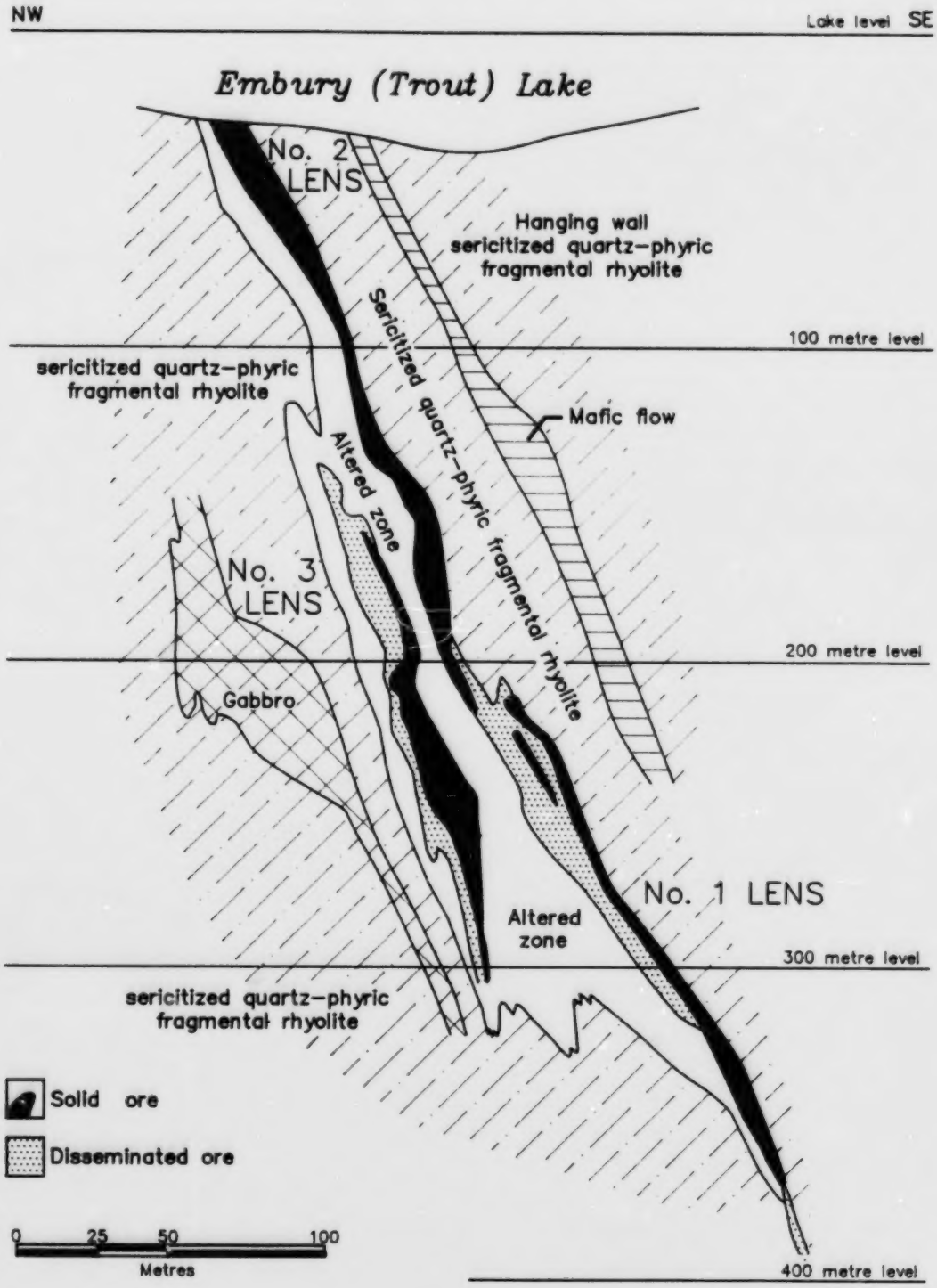

Figure 2–3: Cross section of Trout Lake Mine – south zone (looking 310° Az). Geology after Ko (1986)

The No. 1 lens contained 1.0 M tonnes of 1.71 g/tonne Au, 18.86 g/tonne Ag, 2.25% Cu, 4.2% Zn. The No. 2 lens contained 279 000 tonnes, 1.37 g/tonne Au, 20.23 g/tonne Ag, 0.84 Cu, 6.1% Zn. The No. 3 lens contained 1.44 M tonnes, 1.30 g/tonne Au, 7.54 g/tonne Ag, 2.81 Cu, 4.2% Zn. The No. 5 lens contained 557 000 tonnes, 1.03 g/tonne Au, 25.37 g/tonne Ag, 0.29 Cu, 6.0% Zn.

CLASSIFICATION:

A volcanogenic massive sulphide deposit with two main zones of mineralization containing multiple solid sulphide lenses and accompanying zones of alteration.

REFERENCES:

Assessment Files 90466, 90467
Mines Branch, Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card, 63K/13 Cu12
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Ko, Chung
1986: Geology of the Trout Lake copper-zinc sulphide deposit; Hudson Bay Mining and Smelting Co. Ltd., Flin Flon, Manitoba, 33 p.

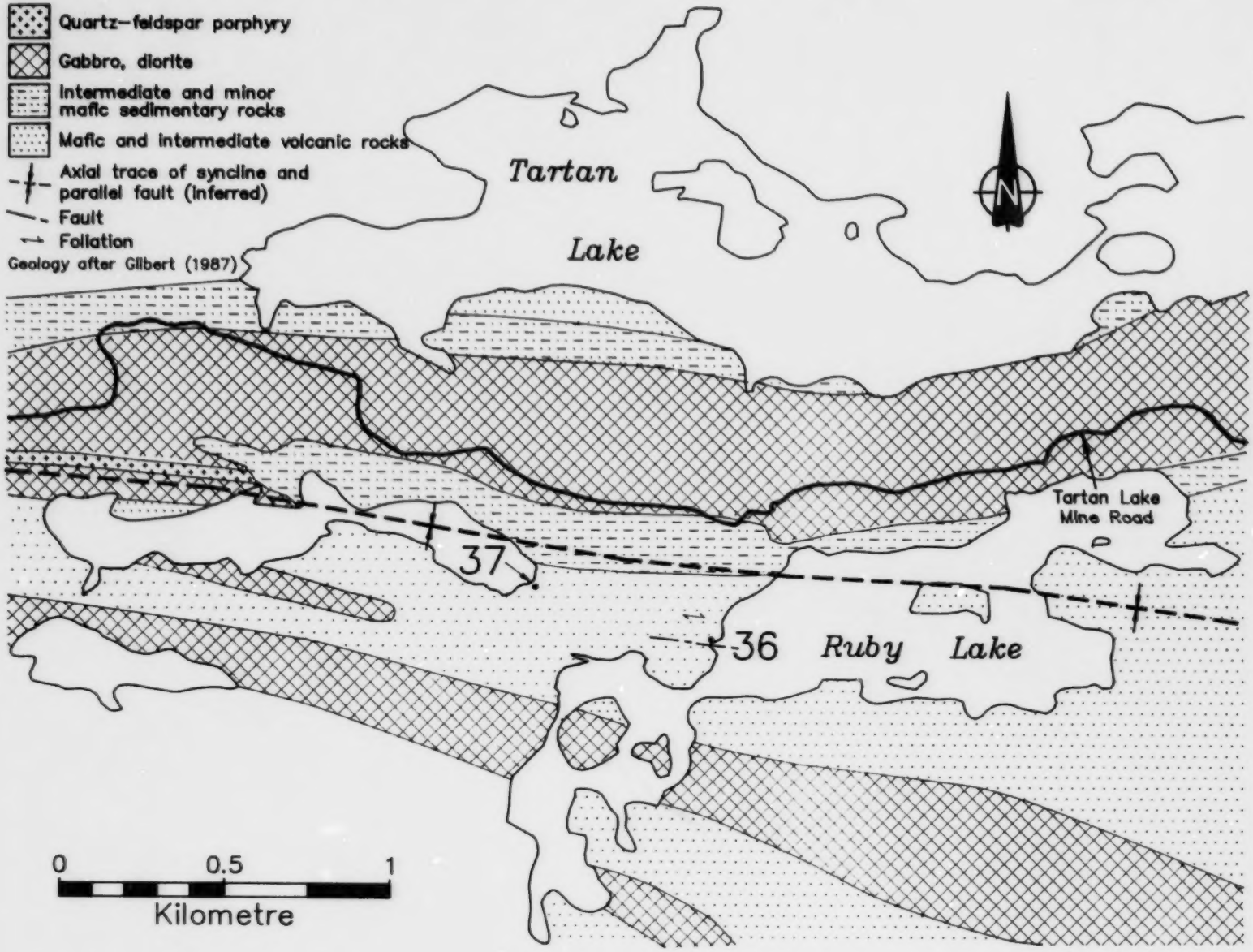


Figure 36–1: Geological setting of occurrences 36 and 37 (63K/13SW).

LOCATION: 36 NAME:
UTM: 6081282N/322159E AREA: West shore of Ruby Lake AIRPHOTO: A26364-166

ACCESS:

Via Tartan Lake Mine road, boat on Ruby Lake.

EXPLORATION HISTORY:

A gold occurrence indicated by Tanton (1941). Several trenches (4 x 1.5 x 1 m) were located along the northern margin of a small valley.

GEOLOGICAL SETTING:

The area is underlain by basaltic pillow lava and sheared mafic volcanic rocks. The small valley south of the occurrence is probably an eroded fault zone.

MINERALIZATION:

Discontinuous quartz-carbonate-tourmaline lenses occur in tension fractures in schistose, chloritic greenstones. The lenses are irregularly distributed, less than 1.0 m long and less than 20 cm thick. Trace chalcopyrite and arsenopyrite occur in schistose greenstone.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Quartz veins in tension fractures associated with a zone of faulting.

REFERENCES:

Gilbert, H.P.

1987: Tartan Lake-Lac Almée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

Tanton, T.L.

1941: Flin Flon, Map 632A, 1 inch to 1 mile; Geological Survey of Canada, Ottawa.

LOCATION: 37 NAME:
UTM: 6081486N/321674E AREA: 700 m west of Ruby Lake (See Fig. 36-1) AIRPHOTO: A26364-166

ACCESS:

Via Tartan Lake Mine Road.

EXPLORATION SUMMARY:

Gold occurrence indicated by Tanton (1941; Figure 36-1). Several small trenches were located near the shoreline and a larger trench (2 x 3 x 2.5 m) was found approximately 120 m east along strike at 110°.

GEOLOGICAL SETTING:

A sulphide-bearing mafic schist zone occurs on the south side of a 50 m wide topographic depression. The exposures south of this depression consist of a 20 m thick unit of sheared and folded feldspar dyke and chloritic schists that are probably a chloritized felsic dyke. Fold hinges in the feldspar dyke commonly contain minor (10-20%) fuchsite and trace pyrite.

MINERALIZATION:

The trenches near the lake shore contain a 10 cm vein of pyrite, rusty weathering chloritic schist and several quartz veins (1-10 cm). The largest trench, 120 m east along strike, exposes a 50 cm thick vein of quartz-tourmaline-carbonate-fuchsite with trace pyrite. This mineralization resembles gold-bearing veins in the Tartan Lake area.

GEOCHEMICAL DATA:

Four grab samples were analyzed. The results are listed on Figure 37-1.

CLASSIFICATION:

Quartz veins in sheared mafic volcanic(?) rocks.

REFERENCES:

Gilbert, H.P.

1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

Tanton, T.L.

1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

Sample #	Rock description	Cu(ppm)	Zn(ppm)	Ag(ppm)	Au(ppb)
42-1-TAR6A	Chlorite schist	300	211	<1	24
42-1-TAR6B	Fuchsite-bearing Quartz-sericite schist	42	18	<1	6
42-1-TAR6C	Silicic rock with pyrrhotite	91	71	<1	12
42-1-TAR6D (Trench 3)	Carbonate-rich silicic rock	82	70	<1	<6

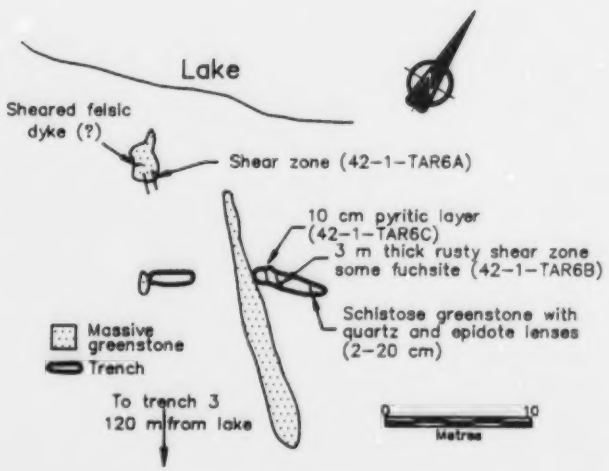


Figure 37-1: Trench and sample locations at occurrence #37 (63K/13SW)

LOCATION: 38 NAME: HONEYSUCKLE
UTM: 6083247N/320783E AREA: Northwest corner of Tartan Lake AIRPHOTO: A26364-166

ACCESS:

Via Tartan Lake mine road, boat on Tartan Lake, 1 km along trail to small lake.

EXPLORATION SUMMARY:

The Honeysuckle property was first staked in 1927 by W.E. Baker. In 1939, Brunne and Copper Lake Telluride Mines Limited optioned the property and completed 10 test trenches, an open pit and nine drill holes (Bateman, 1945). Ore was removed from at least two pits, the largest was 18 x 2.5 x 7 m deep. The pits were still open in 1987.

In 1945, H.W. Knight, Jr. and K.R. Kennedy optioned the Honeysuckle property and drilled 27 holes totalling 2246 m, in conjunction with Tartan Lake Mines, Limited.

Granges Exploration Ltd. conducted geophysical surveys and drilling in 1980/81 (A. O'Donnell; per. comm., 1981).

GEOLOGICAL SETTING:

The area is underlain mainly by pillowed basaltic lavas and tuffs. Gabbroic and felsic dykes with an overall east-west trend are scattered throughout the area.

MINERALIZATION:

The mineralized zones are described by Bateman (1945), Holloway (1939) and Paton (1940). A gold-bearing quartz vein with a thickness of 0.5 to 1.5 m and vertical to 80o south dips has been traced for at least 450 m in an east-west direction (Fig. 38-2). The adjacent sericite-chlorite schist wall rocks are commonly impregnated with arsenopyrite; pyrite, pyrrhotite, chalcopyrite and siderite are also present. The gold mineralization appears to be associated mainly with the arsenopyrite, carbonate, and biotite schists rather than the quartz vein.

The vein system is usually a simple vein; locally it consists of interconnected quartz lenses and stringers. Detailed descriptions of the trenches are given by Bateman (1945).

The vein has an overall strike of 260°. This is a common orientation for gold-bearing structures in the area. This mineralized zone differs from that of the Tartan Lake Mine zones mainly in that it contains less carbonate and chlorite alteration and is very narrow.

GEOCHEMICAL DATA:

Brunne and Copper Lake Telluride Mines Limited reported a representative sample assayed: 0.93 oz/ton Au and 0.08 oz/ton Ag.

CLASSIFICATION:

Quartz vein in sheared mafic to intermediate volcanic rocks.

REFERENCES:

Bateman, J.D.
1945: Gold deposits east of Flin Flon; Geological Survey of Canada, Paper 45-12 and the Precambrian, June, 1945 p.8

Bateman, J.D. and Harrison, J.M.
1945: Mikanagan Lake, Map 832A, one inch to one mile; Geological Survey of Canada, Ottawa.

Brunne and Copper Lake Telluride Mines Limited; North of "54" Mines Limited, and Tartan Lake Gold Mines, Limited
Corporation Files, Manitoba Energy and Mines, Minerals Division.

Gilbert, H.P.
1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

Holloway, A.
1939: Report on Honeysuckle mining claim; unpublished information file 5893, Manitoba Energy and Mines, Mineral Division, 8 p.

Mineral Inventory Card 63K/13SW Au5
Manitoba Energy and Mines, Minerals Division.

Paton, W.B.
1940: Tartan Lake Investigations, 63K/13SW; unpublished information file, Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

Tartan Lake, SE13,63K
Unpublished information file, Manitoba Energy and Mines, Minerals Division.

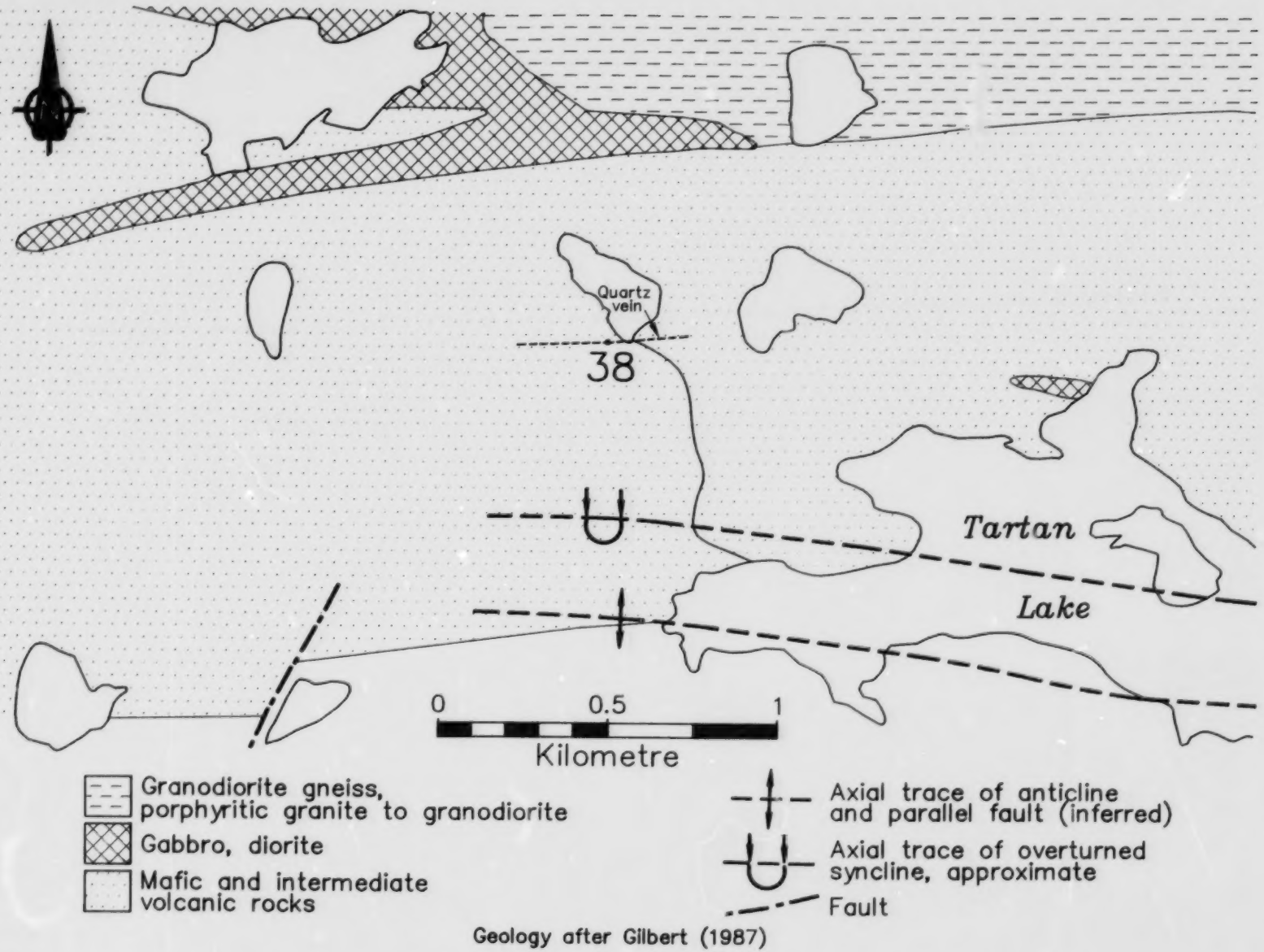


Figure 38–1: Geological setting of occurrence #38 (63K/13SW).

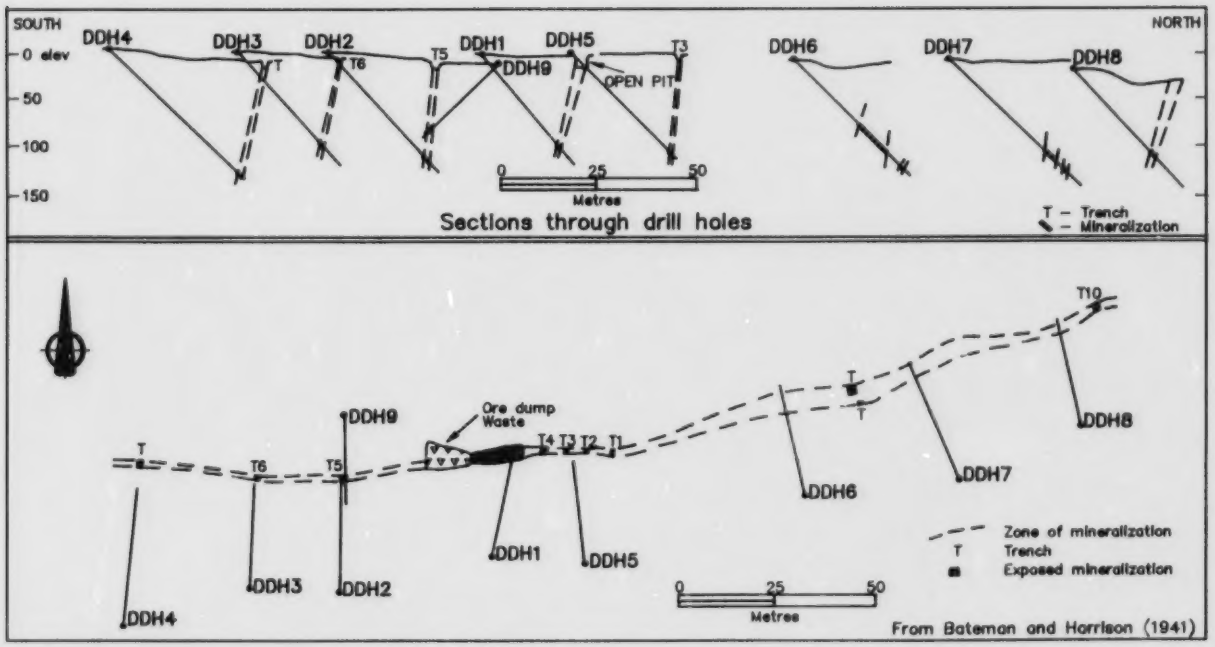


Figure 38–2: Main part of mineralized zone as defined by trenches and drill holes. T10 occurs near lake at locality 38, shown on Figure 38–1.

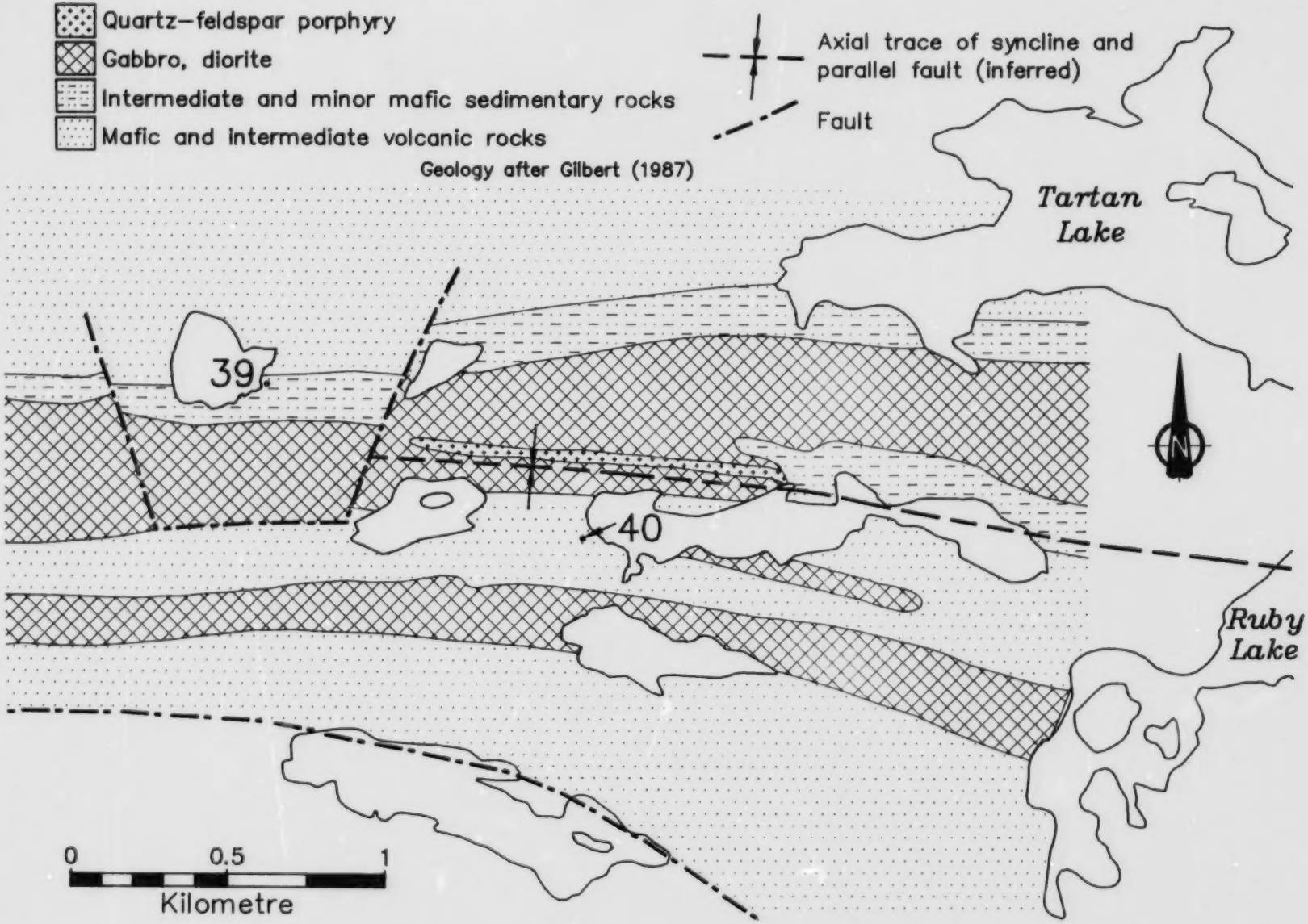


Figure 39–1: Geological setting of occurrences 39 and 40 (63K/13SW).

LOCATION: 39
UTM: 6082254N/319154E

NAME: Glendale
AREA: Near the east shore of Glendale Lake
1.6 km west of Tartan Lake

AIRPHOTO: A26397-220

ACCESS:

500 m north of Tartan Lake Mine Road.

EXPLORATION SUMMARY:

Initially staked in 1931 by W.H. James as the Flin claims group. In 1944, Coniagas Mines Limited optioned Glendale 3 and completed seven drill holes totalling 490 m. In 1946 the claims were assigned to the Consolidated Mining and Smelting Company of Canada Ltd. Three holes, for a total of 97 m, were drilled on Glendale 1 and a total of 906 m of drilling was completed in 21 holes on Glendale 2 and 3. Granges Exploration optioned the property in 1976 and drilled several holes in the vicinity prior to 1981.

GEOLOGICAL SETTING:

Host rocks are schistose layered mafic to felsic volcanic rocks of sedimentary and tuffaceous origin. A large body of medium grained gabbro occurs within several hundred metres of the occurrence.

MINERALIZATION:

Four trenches found in the area were cut in schistose mafic rocks and a quartz-feldspar-sericite rock that was probably a felsic intrusion. Traces of pyrite were observed in the trenches and the old drill core found near the occurrence. The zone of shearing and strongly schistose rock strike 170°. Bateman (1945) noted that a fault zone near Glendale Lake contained a brecciated quartz vein and suggested that vein movement on the fault influenced replacement by carbonate, arsenopyrite and gold mineralization. The 100 m wide zone of strongly deformed rocks contains several zones (2-5 m) of intensely deformed rocks with minor quartz veins. Quartz and tourmaline veins are also present in the gabbro to the south.

GEOCHEMICAL DATA:

Two samples analyzed for gold returned 3 ppb Au and 7 ppb Au.

CLASSIFICATION:

Quartz-carbonate veins in zones of faulting.

REFERENCES:

Bateman, J.D.
1945: Gold Deposits East of Flin Flon; Geological Survey of Canada, Paper 45-12 and the Precambrian, June 1945, p. 8.

Gilbert, H.P.
1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 40 NAME:
UTM: 6081786N/320168E AREA: West end of narrow lake west of Ruby Lake AIRPHOTO: A26364-166
(see Fig. 39-1)

ACCESS:

Via Tartan Lake Mine Road.

EXPLORATION SUMMARY:

Gold occurrence indicated by Tanton (1941). The area has been burnt over and exposures are reasonably good, but only one trench (5 x 1 x 0.5 m) was positively identified.

GEOLOGICAL SETTING:

The area is underlain by schistose mafic volcanic rocks with quartz and feldspar aggregates up to 5 cm in diameter, gabbroic dykes and feldspar porphyry dykes; rock types have a well developed shear fabric. A number of 2-3 cm wide zones of mafic schist occur throughout a 150 m wide zone.

MINERALIZATION:

Several zones of chloritic schists contain quartz and tourmaline veins and stringers (1-20 cm thick), trace carbonate and pyrite. One zone of rusty weathering chloritic schists occurring at the edge of the swamp near the lake shore contains trace pyrite.

GEOCHEMICAL DATA:

A grab sample of rusty weathering chloritic schist contained 440 ppm Cu, 122 ppm Zn, and 24 ppb Au.

CLASSIFICATION:

Quartz-tourmaline stringers and veins in chloritic schist shear zone.

REFERENCES:

Gilbert, H.P.
1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

Tanton, T.L.,
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 41
UTM: 608774E/315013E

NAME:
AREA: Approximately 1 km west of Embury Lake and 80 m south of Annabella Creek

AIRPHOTO: A26364-105

ACCESS:

Via canoe from Embury Lake or walking from Tartan Lake Mine Road at Annabelle Creek in Saskatchewan.

EXPLORATION SUMMARY:

Tanton (1941) indicated a sulphide showing. One trench (4.5 x 2 x 0.5 m) was located.

GEOLOGICAL DATA:

The area is underlain by schistose metasedimentary rocks that are quartz-rich and intensely weathered.

MINERALIZATION:

1-2% disseminated pyrite in metasedimentary rocks.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Syngenetic pyrite in clastic rocks.

REFERENCES:

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

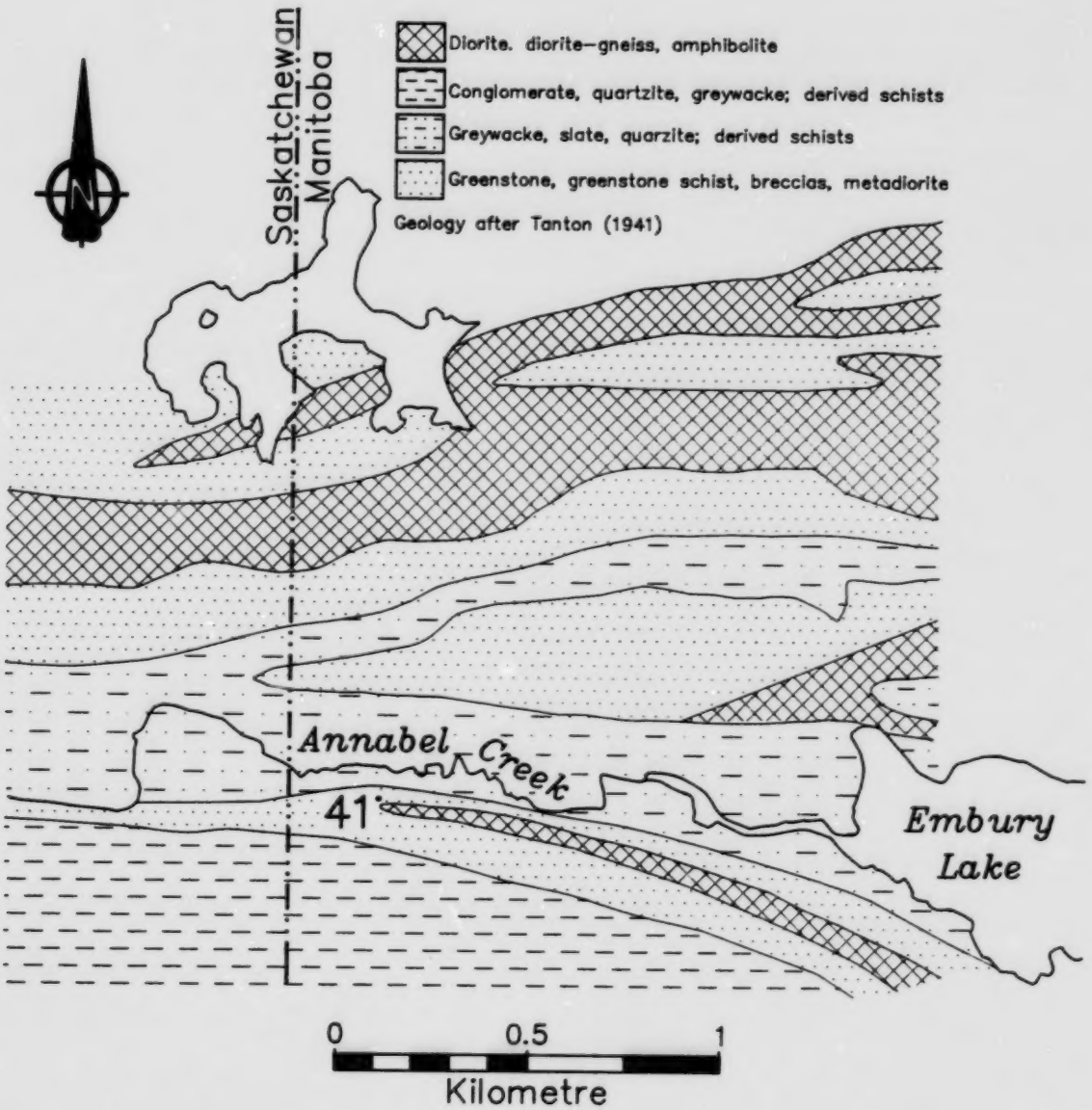


Figure 41–1: Geological setting of occurrence #41 (63K/13SW).

LOCATION: 42 NAME:
UTM: 6081012E/317026E AREA: North shore of northwestern Embury Lake. AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

A talc and chromite occurrence was noted by Tanton (1941). No trenches were found on the exposure. H.B.E.D. completed a geophysical (E.M.) survey on the Pot claims in 1951.

GEOLOGICAL DATA:

Small lens of ultramafic rock in an area of dominantly volcanic rocks. (Fig. 42-1).

MINERALIZATION:

Several talcose lenses 20-30 cm thick and 50-100 cm in length are present. In addition, there are several veinlets and pods with disseminations of chromite. Two drill holes adjacent to and north of the ultramafic rocks showed several intersections of talc schist in the drill core (cf. 63K/13SW #128).

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Chromite segregations in altered ultramafic rock.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card 63K/13SW TLC 2
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

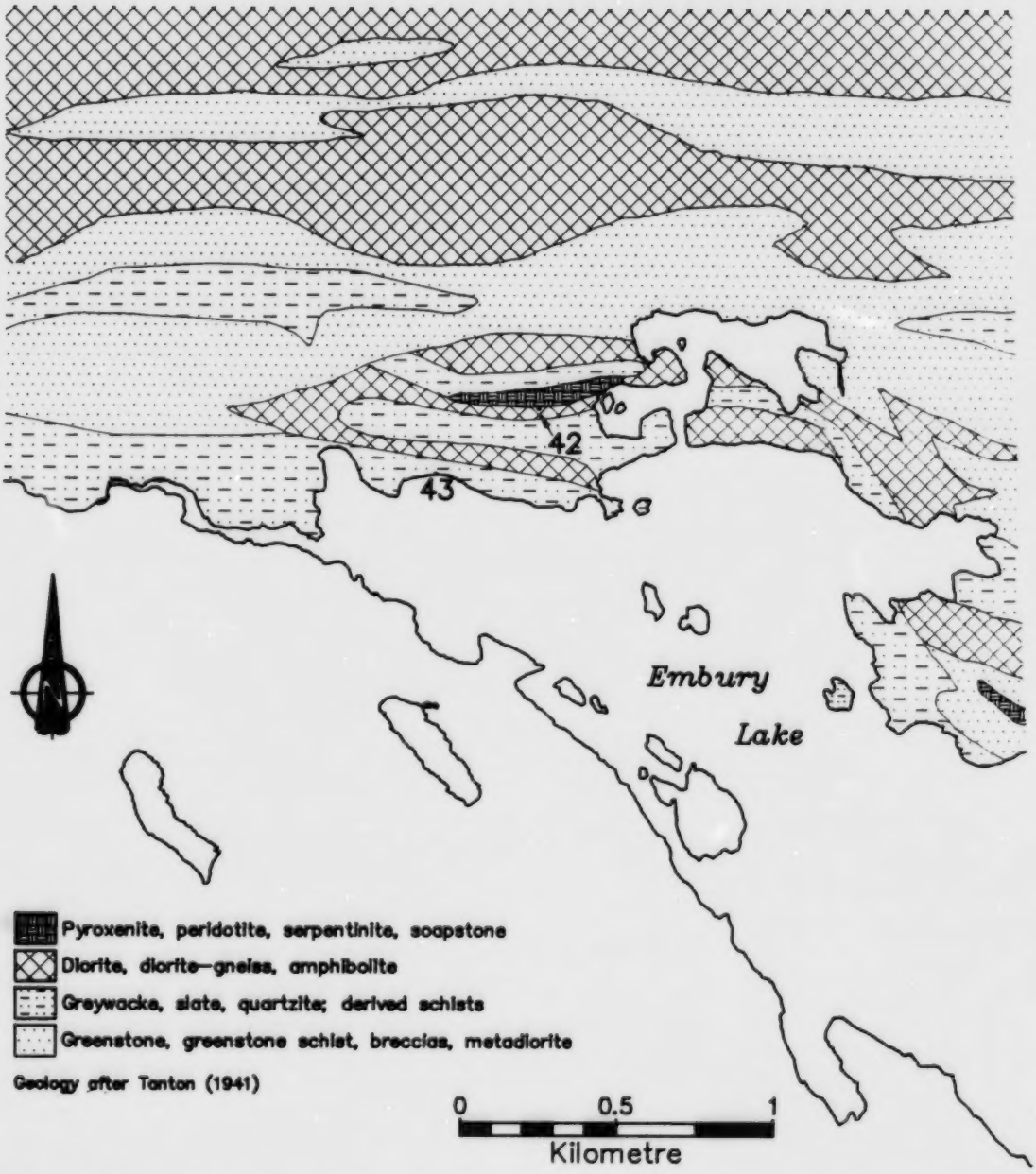


Figure 42–1: Geological setting of occurrences 42 and 43 (63K/13SW).

LOCATION: 43 NAME:
UTM: 6080814N/316708E AREA: North shore of Embury Lake (see Fig. 42-1). AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

Several trenches were dug adjacent to the shoreline to investigate outcroppings of sulphide-bearing rocks prior to 1948. Geophysical surveys (E.M.) were conducted over the area in 1948 and 1951 by Stanmac and H.B.E.D. Granges Exploration undertook geophysical surveys in the area during the mid-1970s.

GEOLOGICAL DATA:

The area is underlain by sheared greywacke, intermediate to mafic volcanic rocks and mafic and ultramafic intrusive rocks (Tanton, 1941; Fig. 43-1). Deformed tuffaceous rocks were noted in the immediate vicinity of the mineralization (Fig. 43-1).

MINERALIZATION:

A pyrite occurrence at the shoreline of Embury Lake consists of pyritic (50% pyrite) quartz-sericite-biotite-chlorite schists, quartz-biotite-chlorite-anthophyllite-carbonate schists, and quartz-sericite schists adjacent to an altered gabbroic intrusion.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Alteration (stratiform) of the type commonly associated with a massive sulphide-type deposit.

REFERENCES:

Assessment Files 90468, 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.,
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

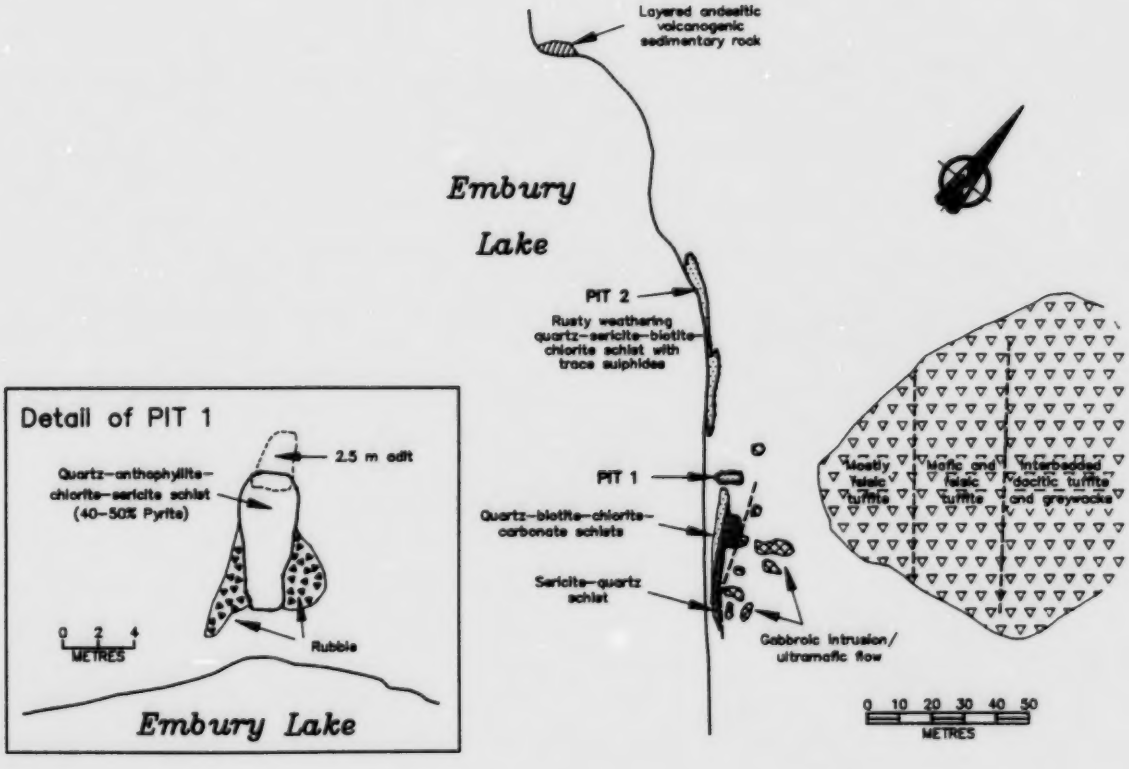


Figure 43-1: Detailed geology, and trench locations at occurrence #43 (63K/13SW).

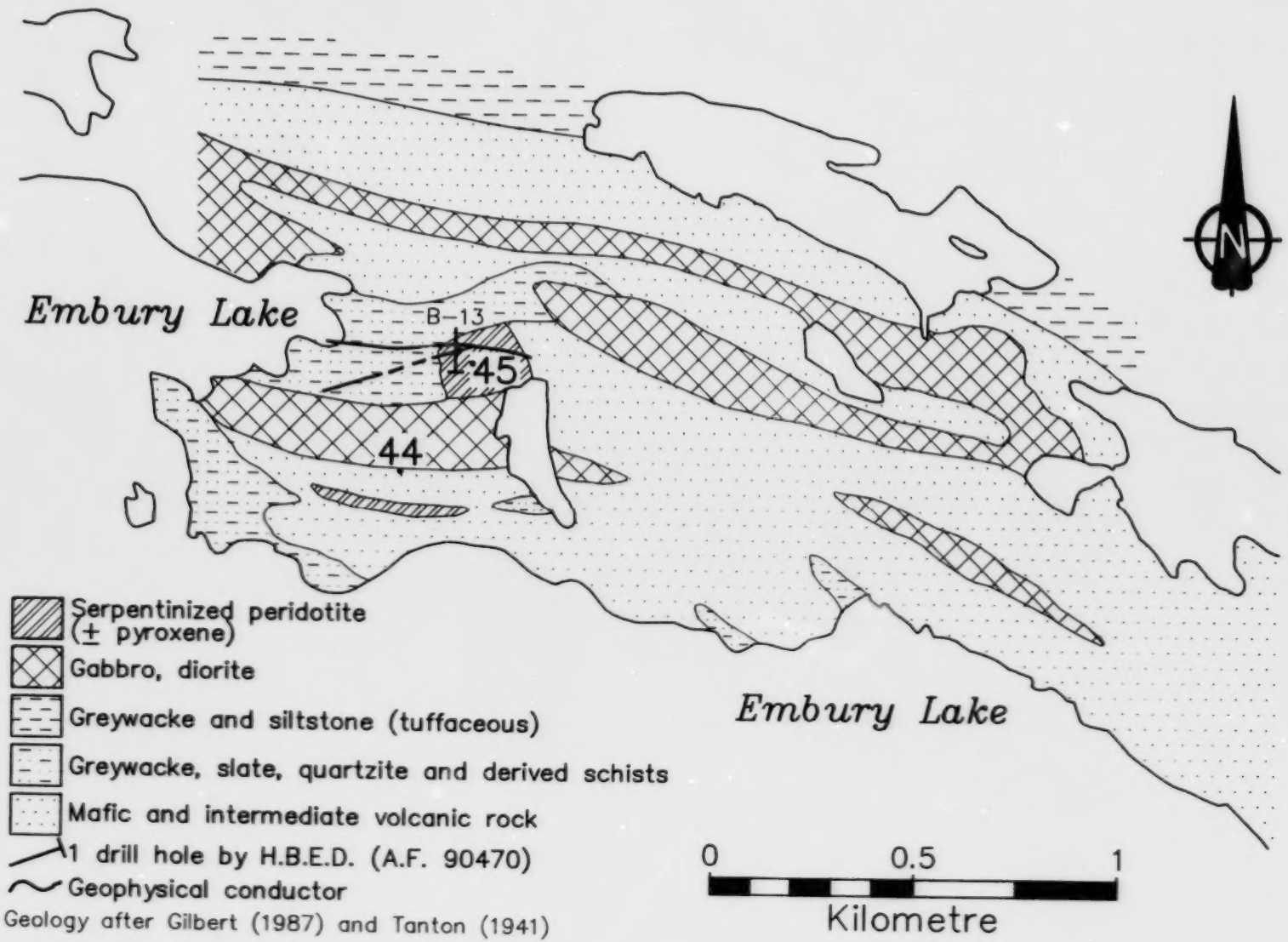


Figure 44–1: Geological setting of occurrences 44 and 45 (63K/13SW).

LOCATION: 44 NAME:
UTM: 608182N/318712E AREA: Approximately 300 m north of Embury Lake. AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake road and boat on Embury Lake.

EXPLORATION SUMMARY:

The Pot claim group was initially staked by R. Lennox and F. Moony in 1951; H.B.E.D. optioned the property and completed an E.M. survey that year. A (15 x 3 x 0.5 m) trench was found on the south side of a small hill.

GEOLOGICAL SETTING:

A small body of ultramafic rock hosts a talc and chromite occurrence as shown by Tanton (1941; Fig. 44-1). A very fine grained silicic rock which may have been a chert(?) occurs on both the south and north margins of the ultramafic rocks.

MINERALIZATION:

Several small, less than 10 cm thick, lenses of talc are exposed in outcrops in several places. This soapstone has a mauve tint. Several small areas of chromite (20 x 10 cm) were noted immediately east of the trench.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Veinlets and disseminations of chromite in talcose rocks derived from an ultramafic intrusion.

REFERENCES:

Tanton, T.L.,
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 45
UTM: 608438N/318846E

NAME:
AREA: Approximately 600 m north of Embury Lake (see Fig. 44-1).

AIRPHOTO: A26397-220

ACCESS:

Via Trout Lake road and boat on Embury Lake.

EXPLORATION SUMMARY:

R. Lennox and F. Moony staked the Pot claims in 1951; H.B.E.D. optioned the property and completed an E.M. survey that year. A 500 m geophysical anomaly was found; it was tested with a 491 m drill hole on Pot 122 in 1953. In 1974, J.J. Studer staked the area as C.B. 7102. Three holes were drilled by H.B.E.D. in 1976. A 1 x 5 x 0.25 m trench was found on the property in 1984.

GEOLOGICAL SETTING:

A body of ultramafic rock hosts a talc occurrence (Tanton, 1941; Fig. 44-1). A brecciated silicic rock (quartz vein?) is present on the northern margin of the ultramafic body.

MINERALIZATION:

Small lenses (10 to 20 cm) of talcose rock are present in the trench and throughout the ultramafic rock. Drill hole B-13 intersected 4.5 m of talc schist, several sections of greywacke with minor to disseminated graphite and pyrite, and a 5 m section of quartzite with disseminated pyrite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Vein-type alteration in ultramafic rocks and disseminated pyrite in quartzite(?) and greywacke.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Mineral Inventory Card: 63K/13 TLC 1
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 47 NAME:
UTM: 6073558N/321302E AREA: South end of Embury Lake. AIRPHOTO: A19663-22

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

Kelly 3 was staked by W.J. Kelly in 1936. Surface work was reported at various times between 1936 and 1948. Approximately 700 m of diamond drilling was "reportedly" completed prior to 1948 (Embury Lake Corporation File). Embury Lake Mining Company Limited (previously Aurlode Gold Mines Limited) optioned the property in 1948 and drilled 56 holes for a total of 3903 m between 1949 and 1951 (Fig. 47-2).

In 1961, Prospectors Airways Company Limited completed an E.M. survey over the area and detected a 700 m long conductor.

Magnetic and E.M. surveys were also registered in 1975. Numerous trenches have been cut in the mineralized rocks throughout the area but have not been mapped in detail.

GEOLOGICAL SETTING:

The area is underlain by volcanic and sedimentary rocks that have been intruded by rhyolitic to gabbroic rocks (Fig. 47-1). The volcanic rocks are overlain by sandstone and conglomerate, derived mainly from a rhyolitic source, that were deposited in a channel on the volcano's surface. Graded beds in the conglomeratic rocks indicate stratigraphic tops are to the north at this locality.

MINERALIZATION:

Volcanic rocks south of the area drilled (Fig. 47-2) are extensively altered and contain veins and disseminations of magnesian chlorite, pyrite and chalcopyrite. Solid sulphides occur along the margins of the gabbro where it intrudes the pyritic mudstones. Pyrite and/or pyrrhotite were found as disseminations and short solid sulphide sections together with graphite in several of the inclined drill cores from under the lake (Fig. 47-2). Quartz stringers in the cores contained trace chalcopyrite. Disseminated chalcopyrite was encountered over core lengths of up to 5 m in five of the vertical holes drilled.

GEOCHEMICAL DATA:

A 15 cm core section in drill hole TR11 contained 6.90% Cu and 1 g/tonne Au. Hole TR14 contained 2.5 m of 0.73% Cu and trace gold, 86 cm of 3.61% Cu and 81 cm of 1.84% Cu and trace Au.

CLASSIFICATION:

Chalcopyrite and pyrite in an alteration zone of the type commonly associated with volcanogenic, massive sulphide deposits. Pyrite and pyrrhotite with graphite in sulphide facies iron formation.

REFERENCES:

Assessment Files 90378, 90471, 92010
Manitoba Energy and Mines, Minerals Division.

Aurlode Gold Mines Limited, SW13/63K
Corporation File, Manitoba Energy and Mines, unpublished files.

Embury Lake Mining Company Lmited, SW13/63K
Corporation File, Manitoba Energy and Mines, unpublihsed files.

Gale, G.H.
1981: Mineral Deposit Studies - Flin Flon area, in Report of Field Activities 1981, p 48.

Mineral Inventory Card: 63K/13SW Cu7
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.,
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

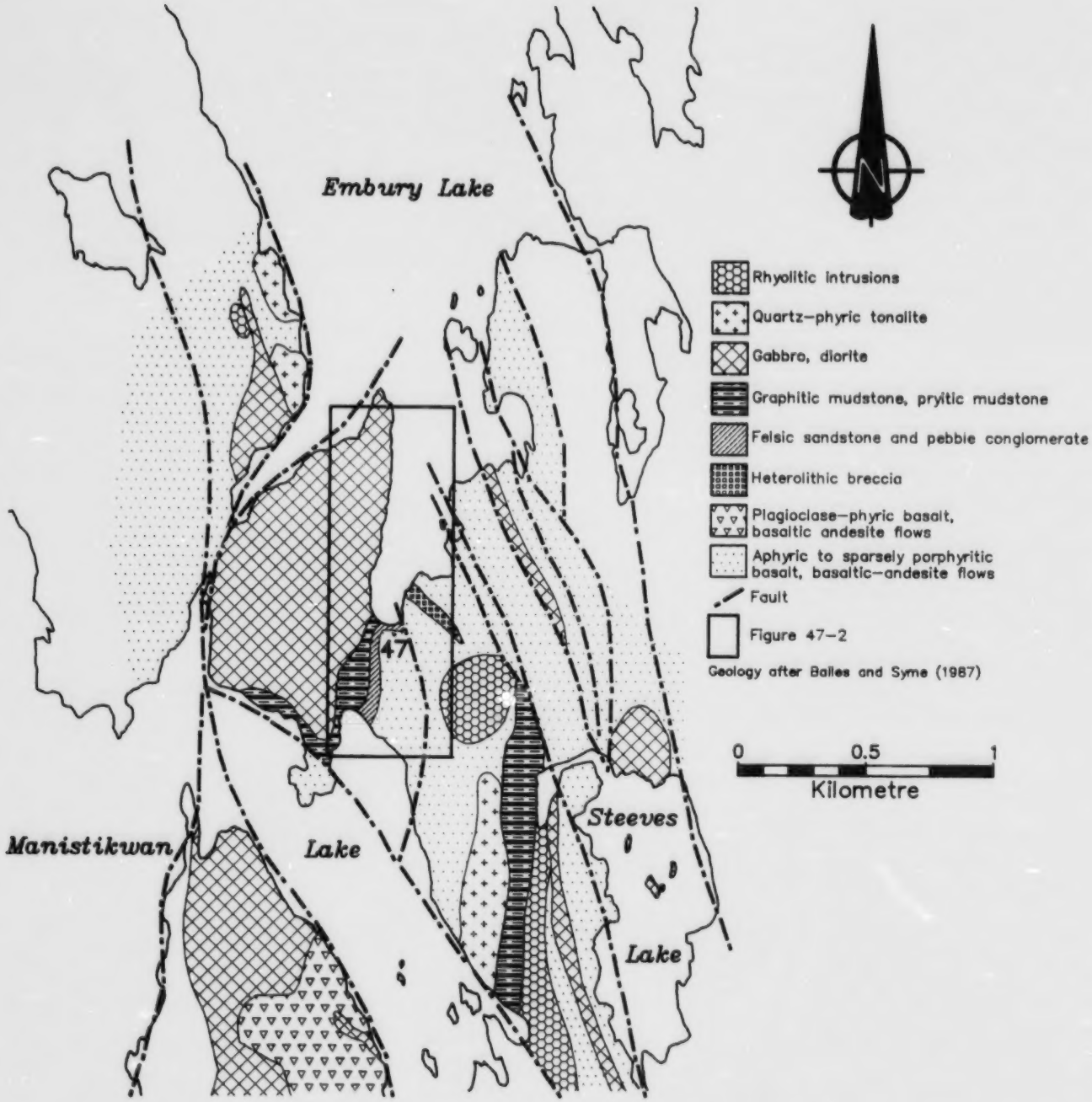


Figure 47–1: Geological setting of occurrence #47 (63K/13SW).

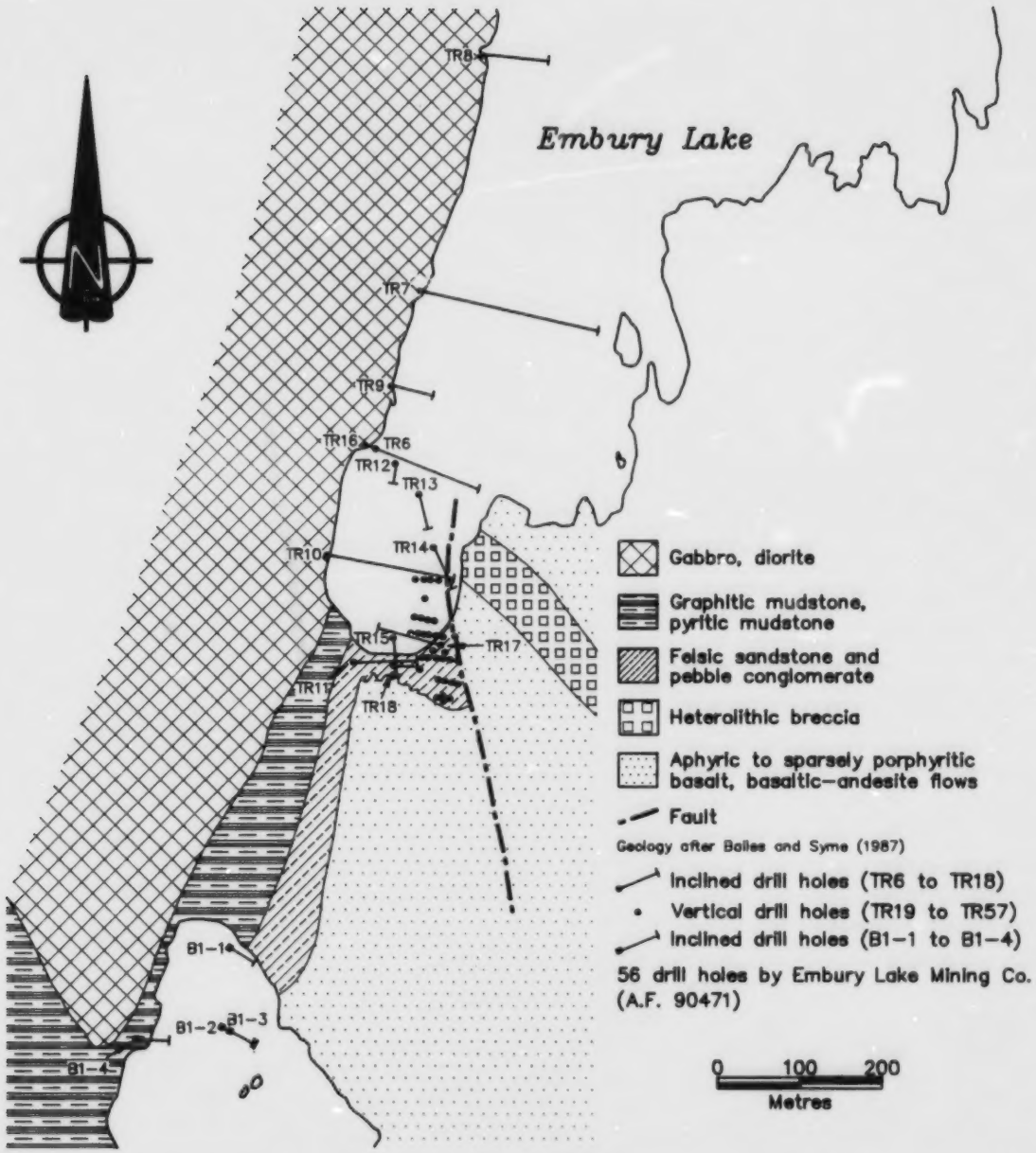


Figure 47-2: Drill hole locations at occurrence #47 (63K/13SW).

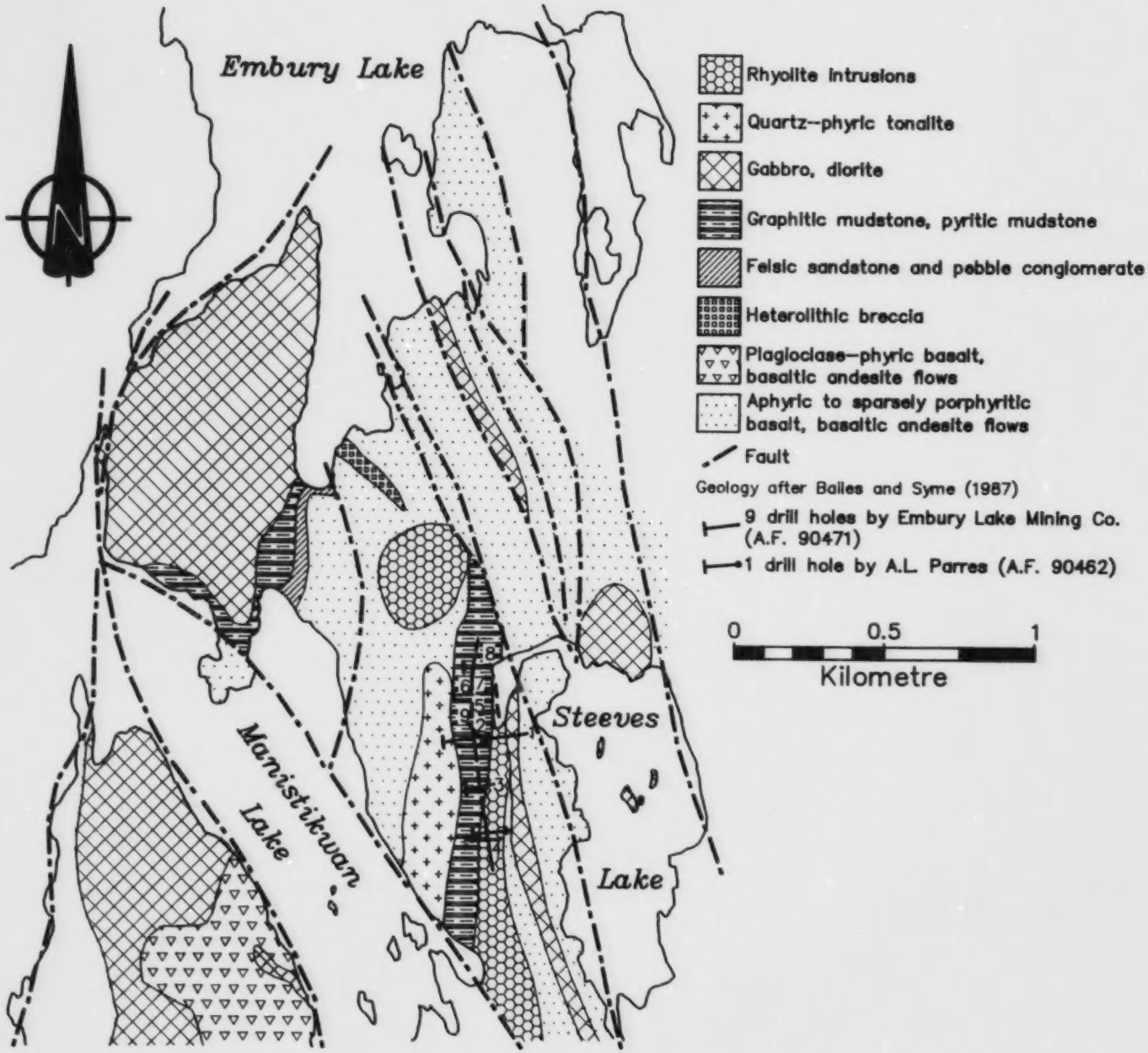


Figure 48–1: Geological setting of occurrence #48 (63K/13SW).

LOCATION: 48 NAME:
UTM: 6072761N/321770E AREA: Small lake (Steeves Lake) south of Embury Lake. AIRPHOTO: A26364-173

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

Embury Lake Mining Company Limited drilled nine holes totalling 1110 m in 1949 on CAD #1. A.L. Parres completed a geophysical survey which located a strong E.M. anomaly, and drilled a 147 m hole through the anomaly in 1971.

GEOLOGICAL SETTING:

The area containing the conductor drilled in 1971 is underlain by basaltic to andesite flows, graphitic and pyritic mudstone, and rhyolitic and gabbroic intrusions (Bailes and Syme, 1987). The drill logs indicate the presence of abundant rhyolitic fragmental rocks in the drill cores (A.F. 90462); this suggests that rhyolitic extrusive rocks are probably present in this area.

MINERALIZATION:

The brief drill core logs provided by Embury Lake Mining Company Limited reported thin seams of pyrite and pyrrhotite in a number of cores (A.F. 90471). Straus Exploration Ltd. attributed the conductor to a 12 m thick graphitic tuff layer with 1% pyrrhotite (A.F. 90462). A 2 m thick section with rhyolitic fragments in a sulphide-bearing andesitic tuff may represent a hydrothermal alteration zone of the massive sulphide type. Grab samples containing several per cent Cu have been obtained from a fault zone on the property (B. Dunlop, pers. comm. 1988).

GEOCHEMICAL DATA:

Straus Exploration Ltd. obtained assays of 0.01 to 0.07% Zn and 0.03 to 0.04% Cu (A.F. 90452).

CLASSIFICATION:

The pyritic mudstone probably represents a sulphide facies iron formation. The sulphide-bearing andesitic tuff with rhyolite fragments may be part of a massive sulphide deposit type alteration zone.

REFERENCES:

Assessment Files 90471, 90462
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.,
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

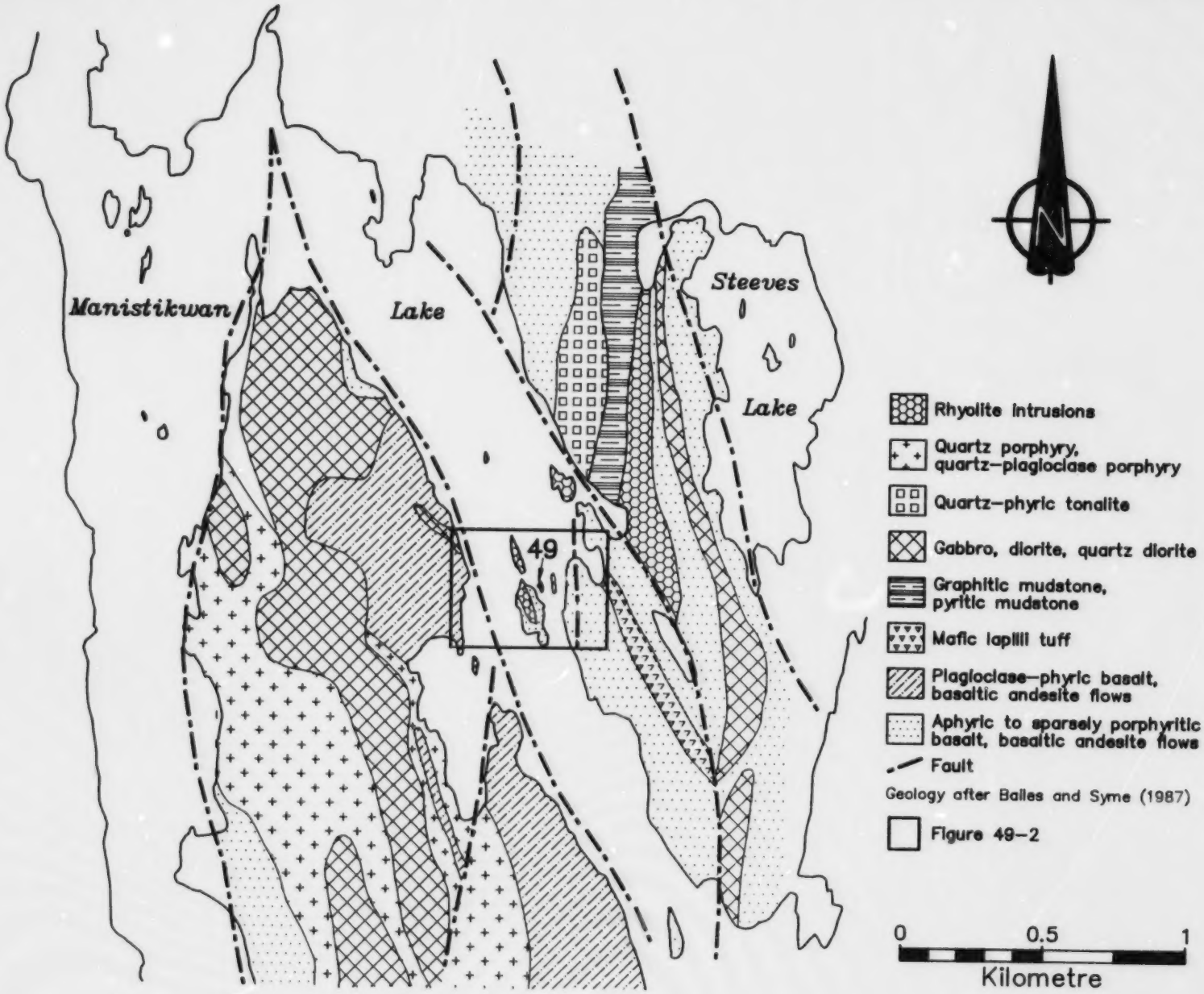


Figure 49–1: Geological setting of occurrence #49 (63K/13SW).

LOCATION: 49 NAME:
UTM: 6071660N/321292E AREA: Small island east of Big Island on Manistikwan Lake AIRPHOTO: A26364-173

ACCESS:

Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:

Fairway Flin Flon Mines recorded six drill holes for a total of 520 m on the D.K. claims group in 1953. Straus Exploration Incorporated completed a 90 m hole in 1972. A (2 x 2 x 1 m) trench was located on the north tip of one island (Fig. 49-2).

GEOLOGICAL SETTING:

The islands are underlain by mafic to intermediate volcanic flows and fragmental rocks. The elongated clasts are 10-100 cm in length and are supported by a grey to grey-white matrix. Some of the flows have been silicified.

MINERALIZATION:

The trench was dug on a fine grained, rusty weathering, silicified rock with fractures containing a soft black mineral (possibly chlorite). Fairway Flin Flon Mines reported disseminated pyrite in five of six drill holes. Hole #3 intersected minor chalcopyrite and hole #5 contained nearly solid pyrite for 10 cm. Straus Exploration Ltd. considered the conductor to be several earthy pyrite layers and 2 m of graphitic schist with stringers of pyrite.

GEOCHEMICAL DATA:

Fairway Flin Flon Mines obtained 0.95% Cu and trace gold from a 45 cm core length. Two samples of the rusty weathering silicified volcanic fragmental rocks analyzed at the Geological Services Branch returned 18 ppb Au and 24 ppb Au.

CLASSIFICATION:

Sulphide facies iron formation a 1.1 m thick layer of very fine grained solid pyrite and graphite.

REFERENCES:

Assessment Files 90464, 90465
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

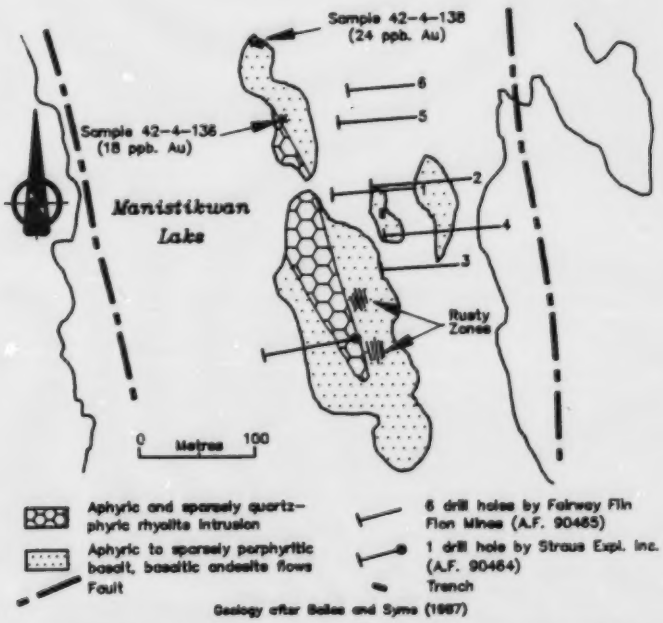


Figure 49-2: Detailed geology, drill, trench and sample locations at occurrence #49 (63K/13SW).

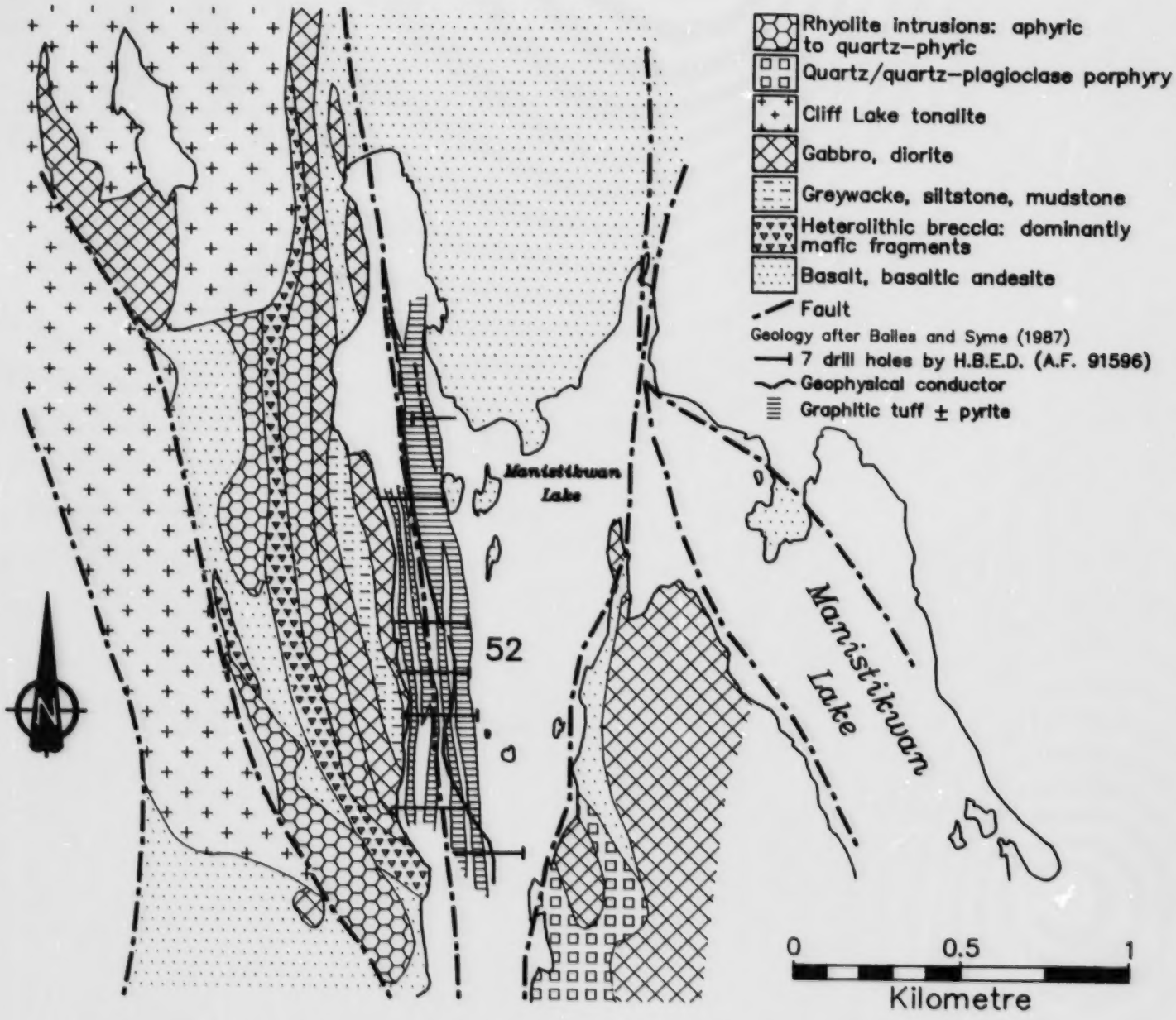


Figure 52–1: Geological setting of occurrence #52 (63K/13SW).

LOCATION: 52
UTM: 6072675N/319876E

NAME:
AREA:

AIRPHOTO: A26364-173

ACCESS:

Via road to Manistikwan Lake.

EXPLORATION SUMMARY:

Seven holes, for a total of 1995 m, were drilled by H.B.E.D. to test a geophysical anomaly on the Big Island Claims group in 1949. E.M. anomalies south of this area were drilled by Granges Exploration in 1979 (A.L. Parres, pers. comm., 1979).

GEOLOGICAL SETTING:

The major E.M. conductor is approximately parallel to a regional fault zone indicated by Balles and Syme (1987). The drill logs indicate that the area is underlain mainly by graphitic schists and siliceous chloritic tuffaceous rocks (Fig. 52-1).

MINERALIZATION:

Disseminated pyrite and pyrrhotite were found throughout the drill core. Layers of pyrite and pyrrhotite were found in the graphitic schists. Holes 11 and 12 intersected trace chalcopyrite mineralization.

GEOCHEMICAL DATA:

Trace amount of Au, Ag, Cu and Zn were found in all seven drill holes (A.F. 91596).

CLASSIFICATION:

Sulphide facies iron formation indicated by layers of pyrite and graphite.

REFERENCES:

Assessment File 91596
Manitoba Energy and Mines.

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake Area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

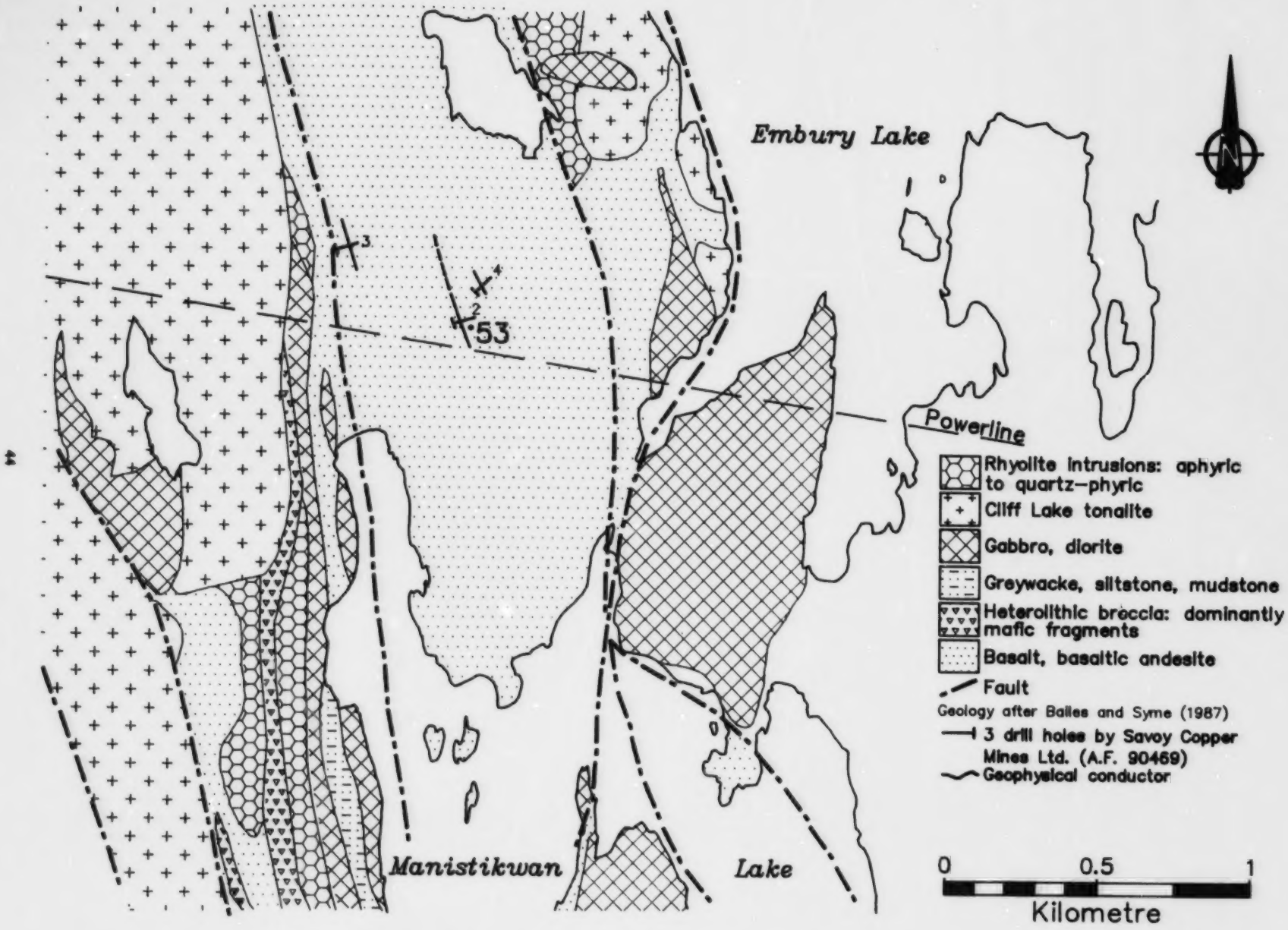


Figure 53–1: Geological setting of occurrence #53 (63K/13SW).

LOCATION: 53 NAME:
UTM: 6074524N/320077E AREA: 400 m north of the northwest arm of Manistikwan Lake and 700 m west of southwest part of the Embury Lake. AIRPHOTO: A26364-172

ACCESS:

Via boat on Embury or Manistikwan lakes.

EXPLORATION SUMMARY:

Three trenches were located (13 x 1 x 2 m, 2 x 1.0 x 0.3 m and 1 x 0.5 x 0.25 m). The two smaller trenches are filled with soil. Savoy Copper Mines Limited completed a geophysical survey and drilled three holes (226 m) in the area during 1960.

GEOLOGICAL SETTING:

Rocks in the vicinity of the smaller trenches are predominantly basaltic pillow lava (Fig. 53-1). Some mafic dykes or lava tubes and a small (10 m) body of quartz-eye porphyry are also present.

MINERALIZATION:

Traces of pyrite in rusty weathering veins and lenses around the rims of pillows are exposed in small outcrops under the power line immediately east of the occurrence identified. Neither sphalerite nor chalcopyrite was found in the large trench; however, most of the rock is a bleached, friable quartz-sericite schist with minor pyrite (Fig. 53-2). This mineralization could not be traced beyond the trench due to lack of exposure and could not be identified on the higher ground to the east.

Savoy Copper Mines Ltd. drill logs recorded several solid sulphide sections as well as disseminated chalcopyrite, sphalerite pyrite and pyrrhotite in sericite schists including a 2.5 m thick solid sulphide section. Several graphitic schist layers contain 10-30% pyrite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Probably massive sulphide type deposit with alteration zone.

REFERENCES:

Assessment Files 90470, 90469
Manitoba Energy and Mines, Minerals Division.

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area. Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

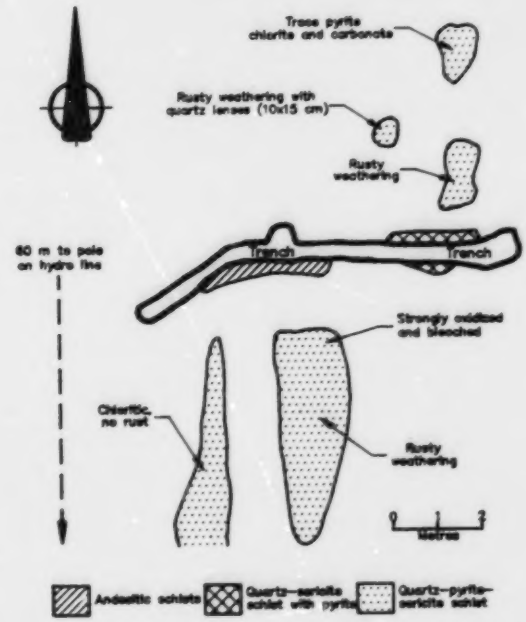


Figure 53-2: Detailed geology, and trench locations at occurrence #53 (63K/13SW).

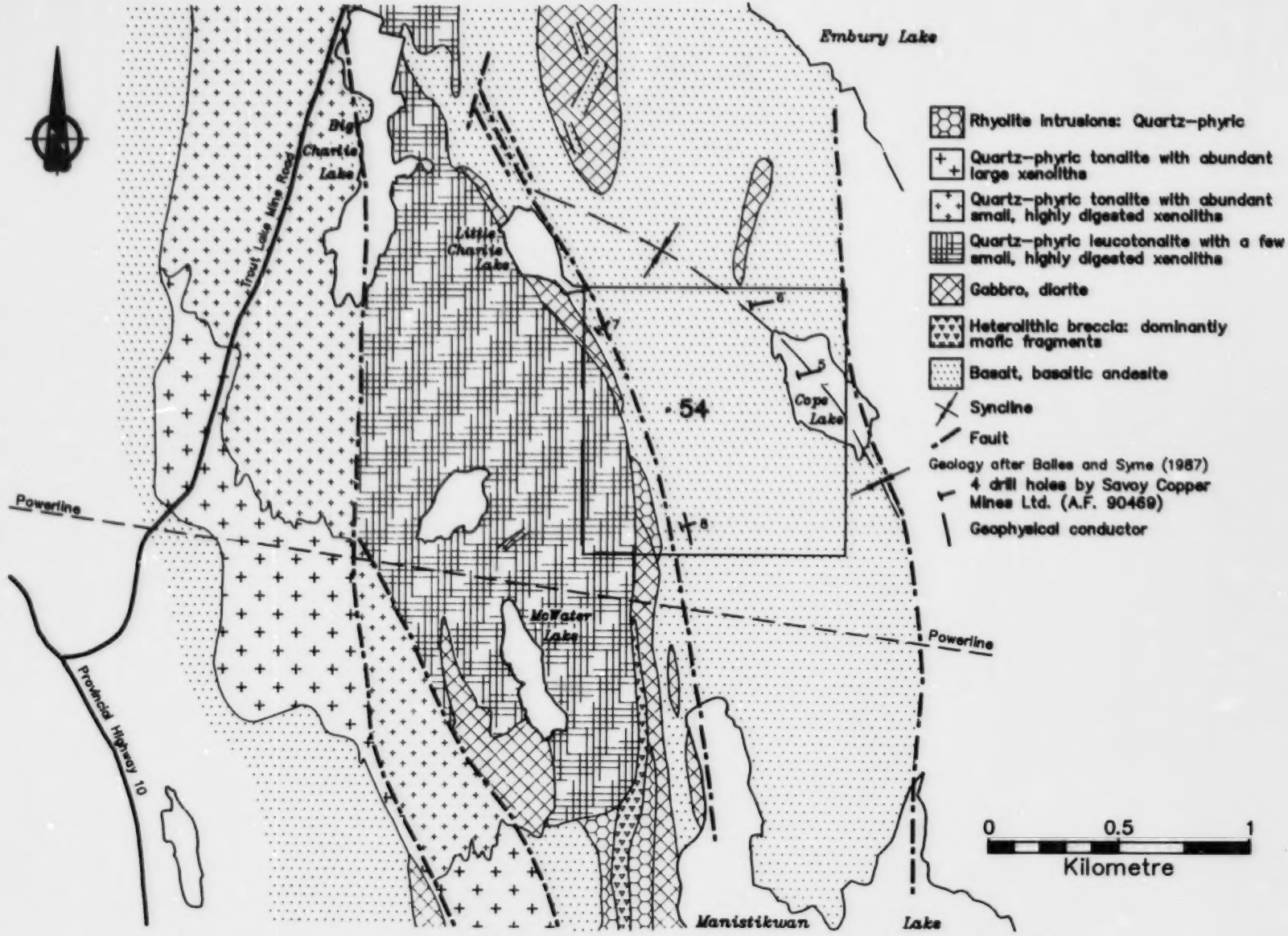


Figure 54–1: Geological setting of occurrence #54 (63K/13SW).

LOCATION: 54
UTM: 6075275N/319558E

NAME:
AREA: East side of a small lake approximately 1.25 km west of Embury Lake

AIRPHOTO: A26397-223

ACCESS:

Via boat on Manistikwan Lake and traverse.

EXPLORATION SUMMARY:

A Cu-Zn occurrence was indicated by Tanton (1941). No trenches could be positively identified in the area following several ground searches. Savoy Copper Mines Ltd. completed a geophysical survey and 276 m of drilling in four holes during 1960.

GEOLOGICAL SETTING:

The occurrence was located by Tanton (1941) in a greyish green, fine grained andesite with several quartz and carbonate stringers. Bailes and Syme (1987) mapped plagioclase-bearing pyroxene-phyric flows and pillow fragment breccias (Fig. 54-1). A thin unit of chert(?) was found to the northeast of the location show by Tanton.

MINERALIZATION:

Rusty weathered pillow lavas were noted during a search of the area for old workings. The drill holes put down by Savoy Mines Ltd. intersected fine grained graphitic mudstone with carbonate stringers and 1-10% fine grained pyritic seams.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Not certain, no definite mineralization event recognized.

REFERENCES:

Assessment File 90469
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area. Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

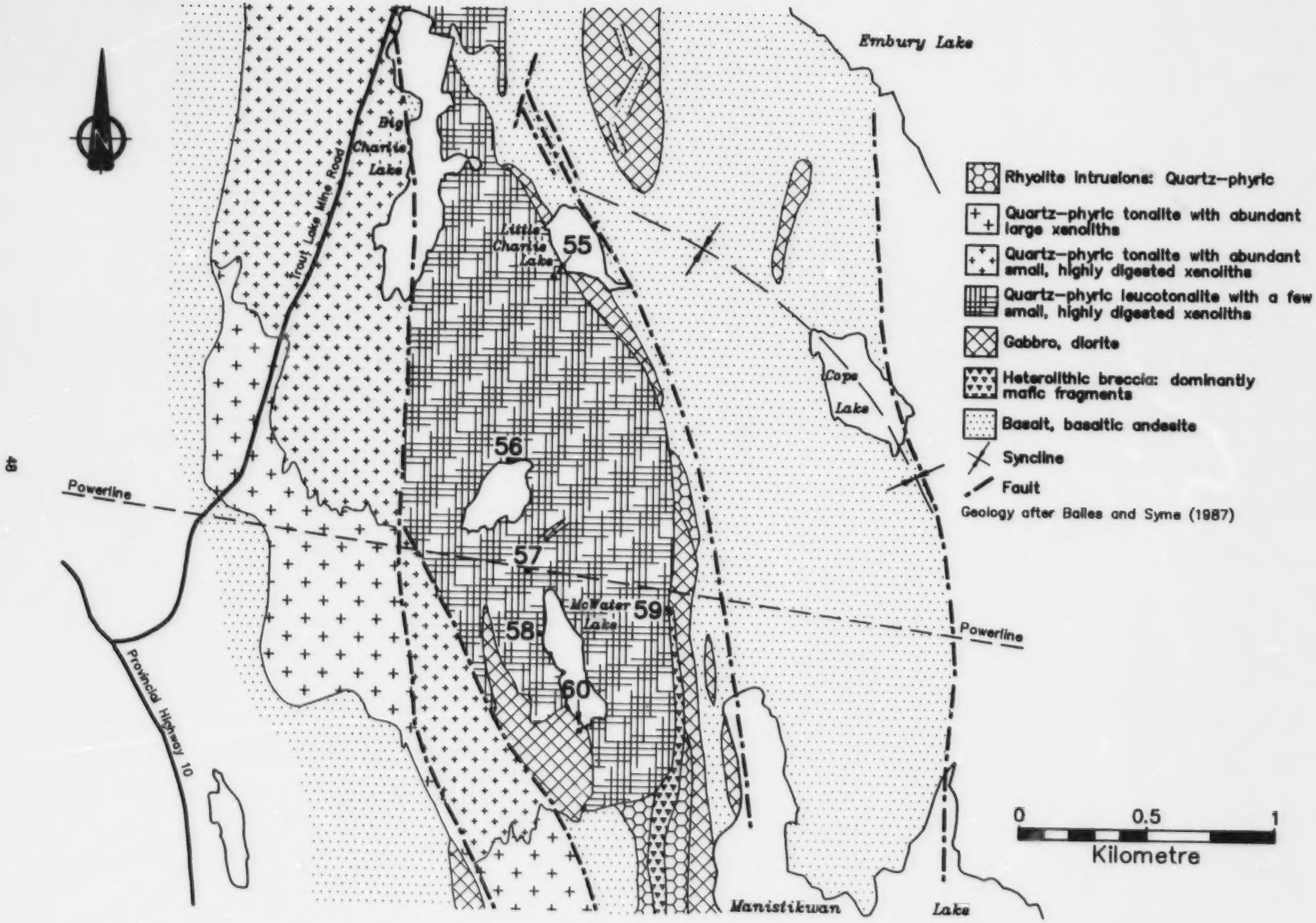


Figure 55–1: Geological setting of occurrences 55, 56, 57, 58, 59 and 60 (63K/13SW).

LOCATION: 55 NAME:
UTM: 6075814N/318981E AREA: Southwest of Little Charlie Lake; AIRPHOTO: A26397-223
approximately 550 m east of the southern portion of Big Charlie Lake
and 1.7 km west of Embury Lake (Fig. 55-1).

ACCESS:

Via Trout Lake Mine Road and traverse.

EXPLORATION SUMMARY:

Gold occurrence indicated by Tanton (1941). One trench (4 x 1.0 x 1.0 m) is located on the east side of a small hill (Fig. 5-2).

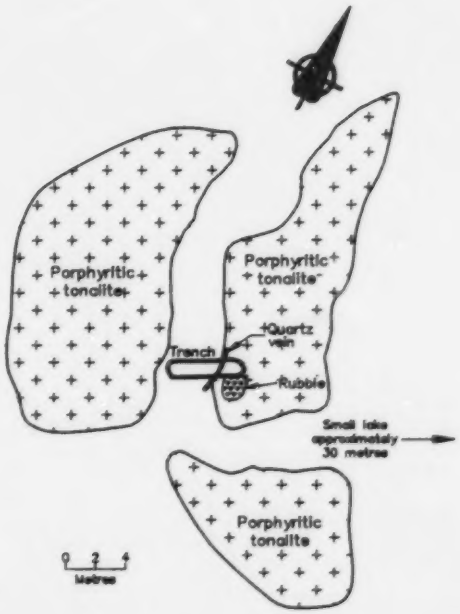


Figure 55–2: Trench location at occurrence #55 (63K/13SW).

GEOLOGICAL SUMMARY:

The occurrence is located within the Cliff Lake Stock. The stock is approximately 5 km^2 and intrudes Amisk Group volcanic rocks. In the general vicinity of the occurrence it consists of quartz-phyric leucotonalite and micrographic leucotonalite with small, highly digested xenoliths (Bailes and Syme, 1987). The xenoliths of hornblende gabbro decrease uniformly towards the centre of the intrusion (Baldwin, 1980).

MINERALIZATION:

A 30 cm thick quartz vein, with a 30° west dip, contains minor pyrite and carbonate. Porphyritic tonalite adjacent to the vein contains trace pyrite as veinlets.

GEOCHEMICAL DATA:

A grab sample (4201-CL3) from a quartz vein returned 1400 ppb Au.

CLASSIFICATION:

Quartz vein.

REFERENCES:

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Baldwin, D.A.
1980: Porphyritic intrusions and related mineralization in the Flin Flon volcanic belt; Department of Energy and Mines, Mineral Resources Division, Economic Geology Report ER79-4.

LOCATION: 56 NAME:
UTM: 6075122N/318768E AREA: Approximately 1 km east Trout Lake Mine road (Fig. 55-1). AIRPHOTO: A26397-223

ACCESS:

Via Trout Lake Mine Road and traverse.

EXPLORATION SUMMARY:

Gold occurrence indicated by Tanton (1941). Two trenches approximately 9 x 2 x 0.5 m and 6 x 1.0 x 0.5 m were located (Fig. 56-1).

GEOLOGICAL SETTING:

The occurrence is located within the Cliff Lake stock the host rocks are quartz-phyric leucotonalite and micrographic leucotonalite with small highly digested xenoliths. The porphyry in this area is fine grained, has a distinctive reddish colour, and contains less mafic minerals than the medium- to coarse-grained phase.

MINERALIZATION:

The porphyry is cut by irregular veinlets of coarse, white quartz, and vein-like bodies of fine grained chlorite. The trenches cut 15-25 cm white quartz veins with pyrite- and tourmaline-filled joints. Locally, the porphyry contains several chloritic and pyritic shear zones; trace amounts of pyrite occur throughout the porphyry at this locality.

GEOCHEMICAL DATA:

A grab sample (42-1-C24) returned 68 ppb Au.

CLASSIFICATION:

Quartz vein in pyritic porphyritic tonalite.

REFERENCES:

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

Stewart, J.W.
1977: Gold showings, N.E. of Flin Flon; Manitoba Energy and Mines, Minerals Division; unpublished field notes.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

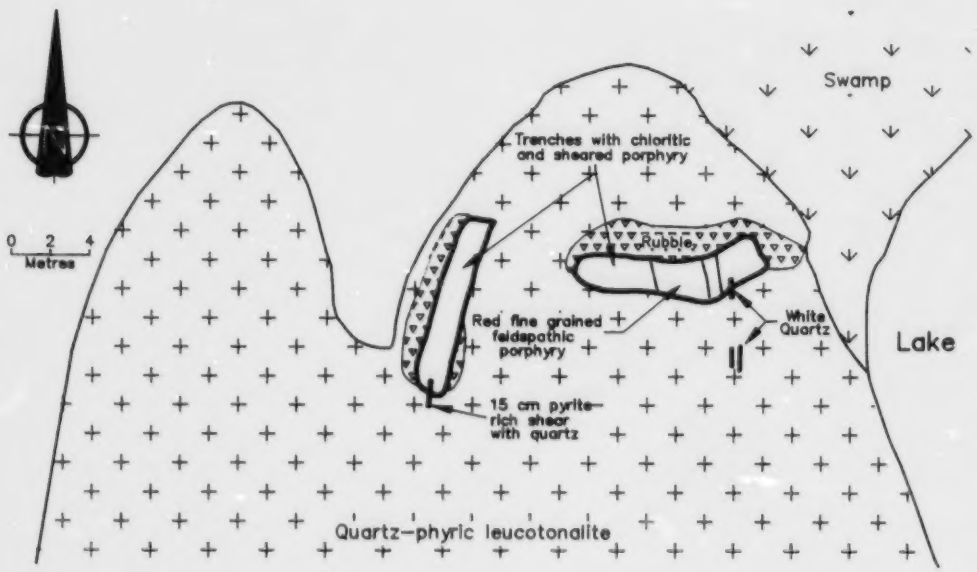


Figure 56-1: Detailed geology, and trench locations at occurrence #56 (63K/13SW).

LOCATION: 57
UTM: 6074696N/318851E

NAME:
AREA: Under power line approximately 1 km east of Trout Lake Mine road (see Fig. 55-1).

AIRPHOTO: A26397-223

ACCESS:
Via Trout Lake Mine Road and traverse.

EXPLORATION SUMMARY:
A copper occurrence was indicated by Tanton (1941). Several trenches were located beneath the power line (Fig. 57-1).

GEOLOGICAL SETTING:
The occurrence, located within the Cliff Lake Stock, is hosted by quartz- phyric leucotonalite and micrographic leucotonalite with small, highly digested xenoliths (see Balles and Syme, 1987).

MINERALIZATION:
Trace pyrite occurs in a fine grained reddish phase of the porphyry. A 25 cm wide quartz vein contains minor amounts of chalcopyrite.

GEOCHEMICAL DATA:
None.

CLASSIFICATION:
Quartz vein with trace chalcopyrite.

REFERENCES:
Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services Branch, Geological Map GR87-1-1.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

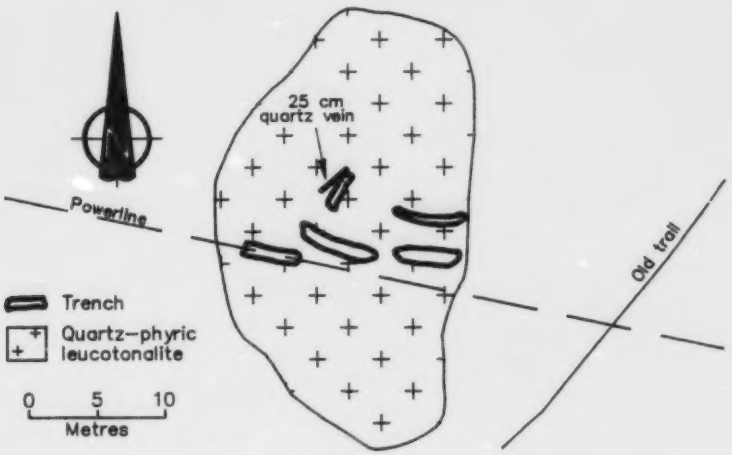


Figure 57–1: Trench locations at occurrence #57 (63K/13SW).

LOCATION: 58
UTM: 6074430N/318882E

NAME:
AREA: On the west shore of McWater Lake (see Fig. 55-1).

AIRPHOTO: A26397-223

ACCESS:

Via Trout Lake Mine Road and traverse.

EXPLORATION SUMMARY:

Tanton's 1941 geological map indicates two gold occurrences in the area within the Cliff Lake porphyry. Small trenches were located at both localities.

GEOLOGICAL SETTING:

The northernmost set of trenches were cut in quartz-phyric leucotonalite (Fig. 58-1). The southernmost set of trenches has been cut at the contact between a basaltic xenolith and the Cliff Lake quartz-phyric leucotonalite (Fig. 58-2).

MINERALIZATION:

Minor pyrite, chalcopyrite and magnetite occur in silicified fine grained chloritic basaltic rocks (Fig. 58-2). One trench cuts a quartz vein in the quartz porphyry (Fig. 58-1) and the long trench in Figure 58-2 also probably followed a quartz vein.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Quartz vein in porphyritic tonalite.

REFERENCES:

Balles, A.H. and Syme, E.C.

1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Stewart, J.W.

1977: Gold showings N.E. of Flin Flon; Manitoba Energy and Mines, Minerals Division, unpublished field notes.

Tanton, T.L.

1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

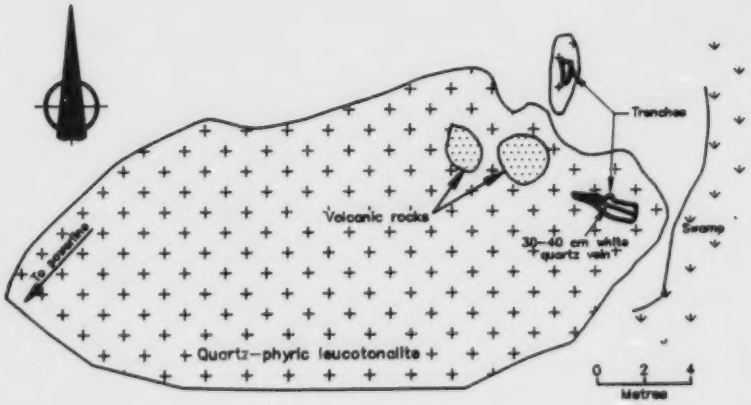


Figure 58–1: North trench locations at occurrence #58 (63K/13SW).

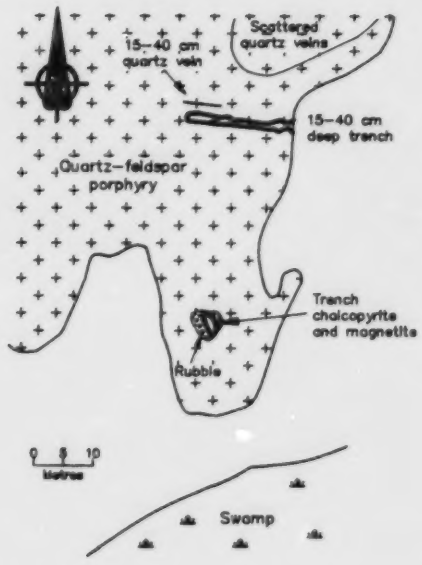


Figure 58–2: South trench locations at occurrence #58 (63K/13SW).

LOCATION: 59
UTM: 6074795N/319403E

NAME:
AREA: 400 m northwest of the northwest arm of Manistikwan Lake (See Fig. 55-1).

AIRPHOTO: A26397-223

ACCESS:

Via Trout Lake Mine road or boat to north end of Manistikwan Lake and traverse.

EXPLORATION SUMMARY:

Gold occurrence indicated by Tanton (1941). Several trenches and a 2 m deep pit were cut at two different places (Fig. 59-1). Most of the quartz vein material from the trenches has been removed.

GEOLOGICAL SETTING:

The occurrence is situated within the Cliff Lake porphyritic tonalite.

MINERALIZATION:

At locality 59-1a (Fig. 59-1) three trenches were put down on a single vein of white quartz with a maximum width of 40 cm. At locality 59-1b several veins cut a greenish porphyry that locally contains abundant disseminated pyrite and is rusty weathering.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

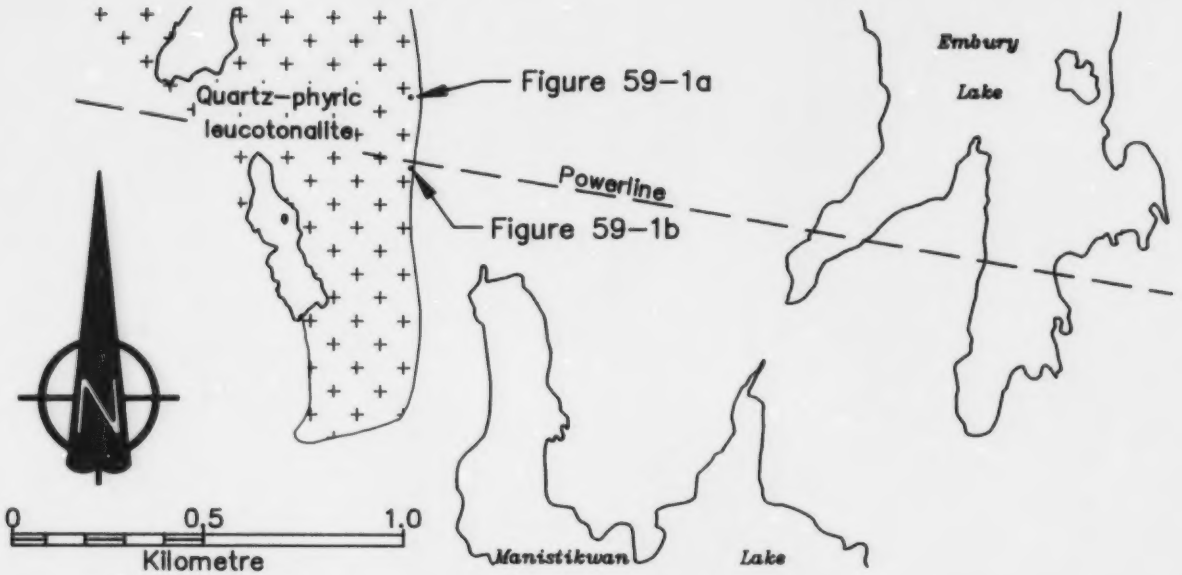
Quartz vein in altered porphyritic tonalite (59-1b).

REFERENCES:

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Stewart, J.W.
1977: Gold showings N.E. of Flin Flon; Manitoba Energy and Mines, Minerals Division; unpublished field notes.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.



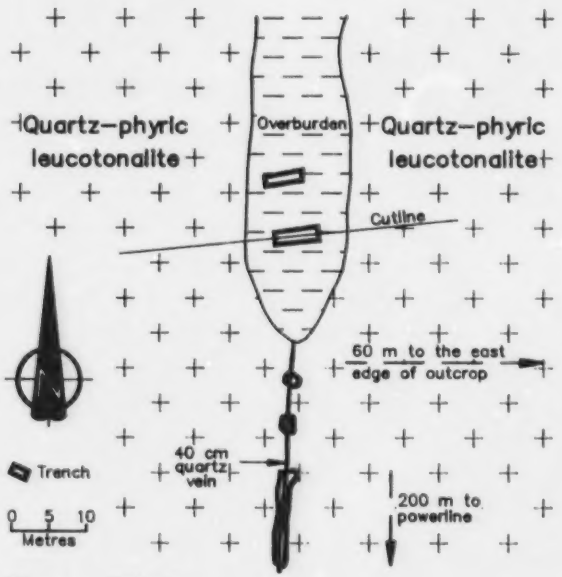


Figure 59-1a

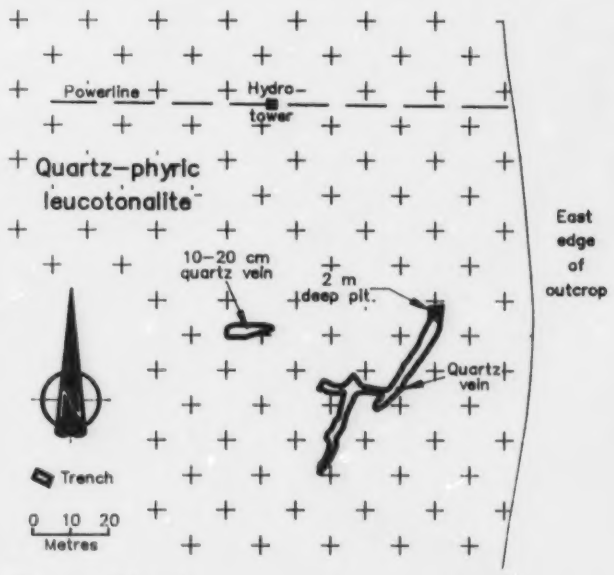


Figure 59-1b

Figure 59-1: Trench locations at occurrence #59 (63K/13SW).

LOCATION: 60
UTM: 6074040N/319024E

NAME:

AREA: On the south shore of McWater Lake approximately 600 m west of the northwest arm of Manistikwan Lake (See Fig. 55-1)

AIRPHOTO: A26397-224

ACCESS:

Via Trout Lake Mine road or boat to the northwest arm of Manistikwan Lake and traverse.

EXPLORATION SUMMARY:

A trench (2 x 1 x 1.5 m) was located near the gold occurrence shown by Tanton (1941).

GEOLOGICAL SETTING:

The pit occurs at the contact between a small body of medium grained equigranular diorite and the Cliff Lake quartz-phyric leucotonalite.

MINERALIZATION:

The contact zone is silicified with two 15 cm thick quartz veins and quartz stringers. Small quartz crystals with good crystal faces occur in vugs and at the centre of the veins.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Quartz veins.

REFERENCES:

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

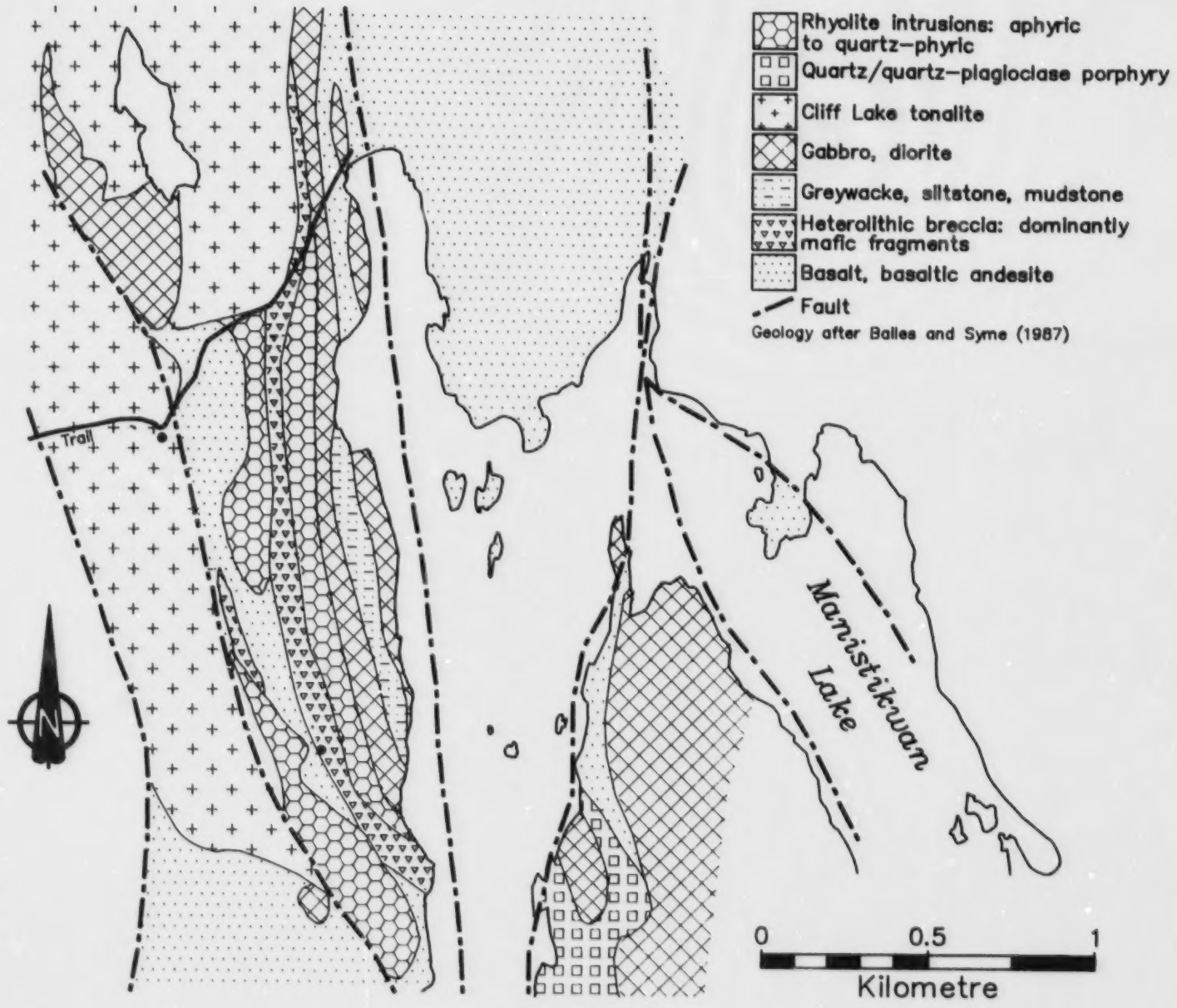


Figure 61–1: Geological setting of occurrences 61 and 62 (63K/13SW).

LOCATION: 61 NAME:
UTM: 3073332N/319011E AREA: Approximately 800 m south of McWater Lake. AIRPHOTO: A26397-224

ACCESS:

Via boat to the northwest arm of Manistikwan Lake and follow old trail.

EXPLORATION SUMMARY:

Gold occurrence indicated by Tanton (1941).

GEOLOGICAL SETTING:

The area is underlain by amygdaloidal basaltic flows.

MINERALIZATION:

Several quartz veins up to 30 cm thick occur in a sericitic schist zone. Fractures are rust coated and tourmaline occurs in a small fault zone.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Quartz veins.

REFERENCES:

Balles, A.H. and Syme, E.C.

1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services Map GR87-1-1.

Tanton, T.L.

1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

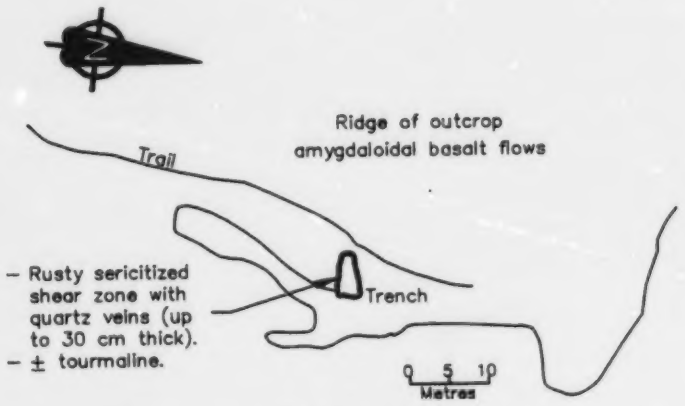


Figure 61–2: Trench location at occurrence #61 (63K/13SW).

LOCATION: 62
UTM: 6072362/319467E

NAME:
AREA: 300 m west of Manistikwan Lake
(See Fig. 61-1).

AIRPHOTO: A26397-225

ACCESS:

Via boat to the northwest arm of Manistikwan Lake or traverse from Highway 10.

EXPLORATION SUMMARY:

The copper/zinc occurrence was first staked prior to 1930. In 1945, W.J. Kelly staked C.C.F.2 and 3. Trenches were made between 1948 and 1950. In 1951 the claims were assigned to Fairway Flin Flon Mines Ltd. Geological mapping, trenching, E.M. surveys and four drill holes, totalling 377 m, were completed in 1952. In addition, trenches and four short holes were completed south of the main workings. One drill hole was completed in the vicinity of the occurrence by H.B.E.D. during the winter of 1980-81.

GEOLOGICAL SETTING:

The occurrence is situated in an area of feldspar-phyric mafic flows and heterolithic breccia (with dominantly mafic fragments). Quartz-phyric felsic intrusions are present on both sides of the volcanic rocks (Bailes and Syme, 1987). Locally, the mafic volcanics are intruded by dioritic rocks.

MINERALIZATION:

A mineralized zone is exposed in outcrop for approximately 45 m within claim C.C.F.2. Disseminations of sphalerite were reported from surface samples. Pyrite (10-20%) and minor chalcopyrite are also present. A one metre wide pyritic and silicic zone with 10-20% pyrite occurs at the contact of a medium grained dioritic intrusion and massive basaltic rocks (Fig. 62-1). Chalcopyrite found south of the main zone was considered to be fracture filling mobilizate.

GEOCHEMICAL DATA:

In parts of the zone with heavy sphalerite mineralization Fairway Flin Flon Mines Ltd. report assays of up to 12% Zn.

CLASSIFICATION:

Vein type sulphide mineralization is probably the result of mobilization. Rusty weathered rhyolitic fragmental rocks suggest area should be investigated for its potential to contain massive sulphide type deposits.

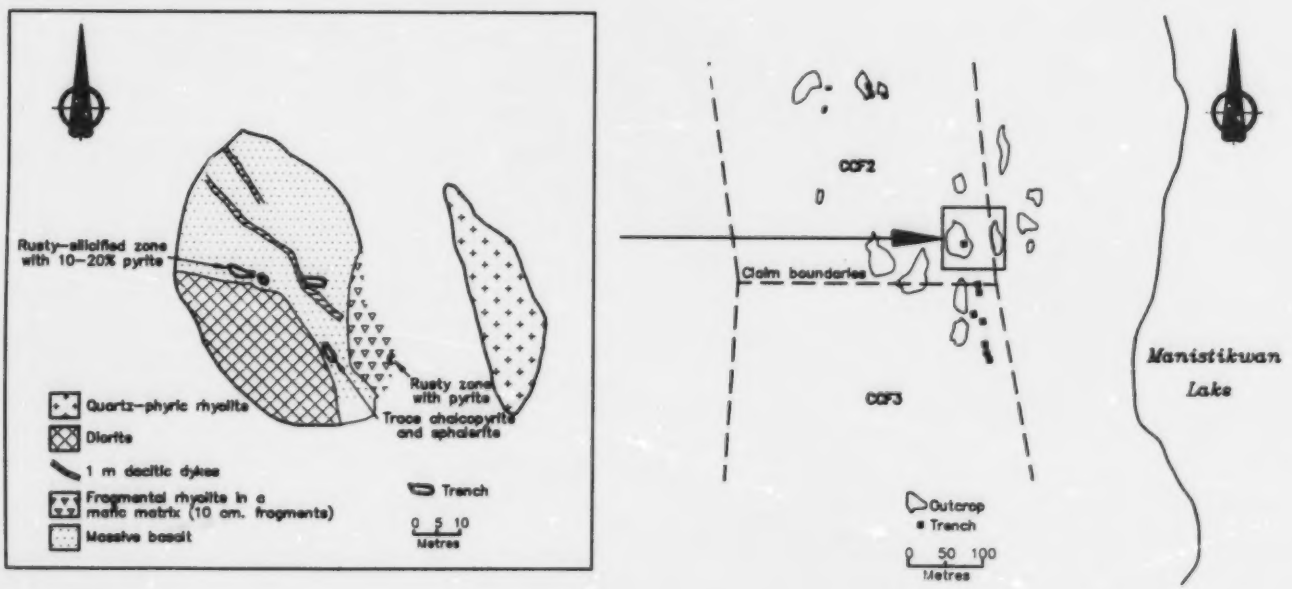


Figure 62-1: Detailed geology, and trench locations at occurrence #62 (63K/13SW).

REFERENCES:

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

C.D., C.C.F., M.S.B., Cliff, Earl, Dianna, Bay, Estherel, Ringo, Shear, SW13, 3K
Nonconfidential Portions of Assessment File, Manitoba Energy and Mines, Minerals Division.

Fairway Flin Flon Mines Limited, SW13, 63K
Corporation File, Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

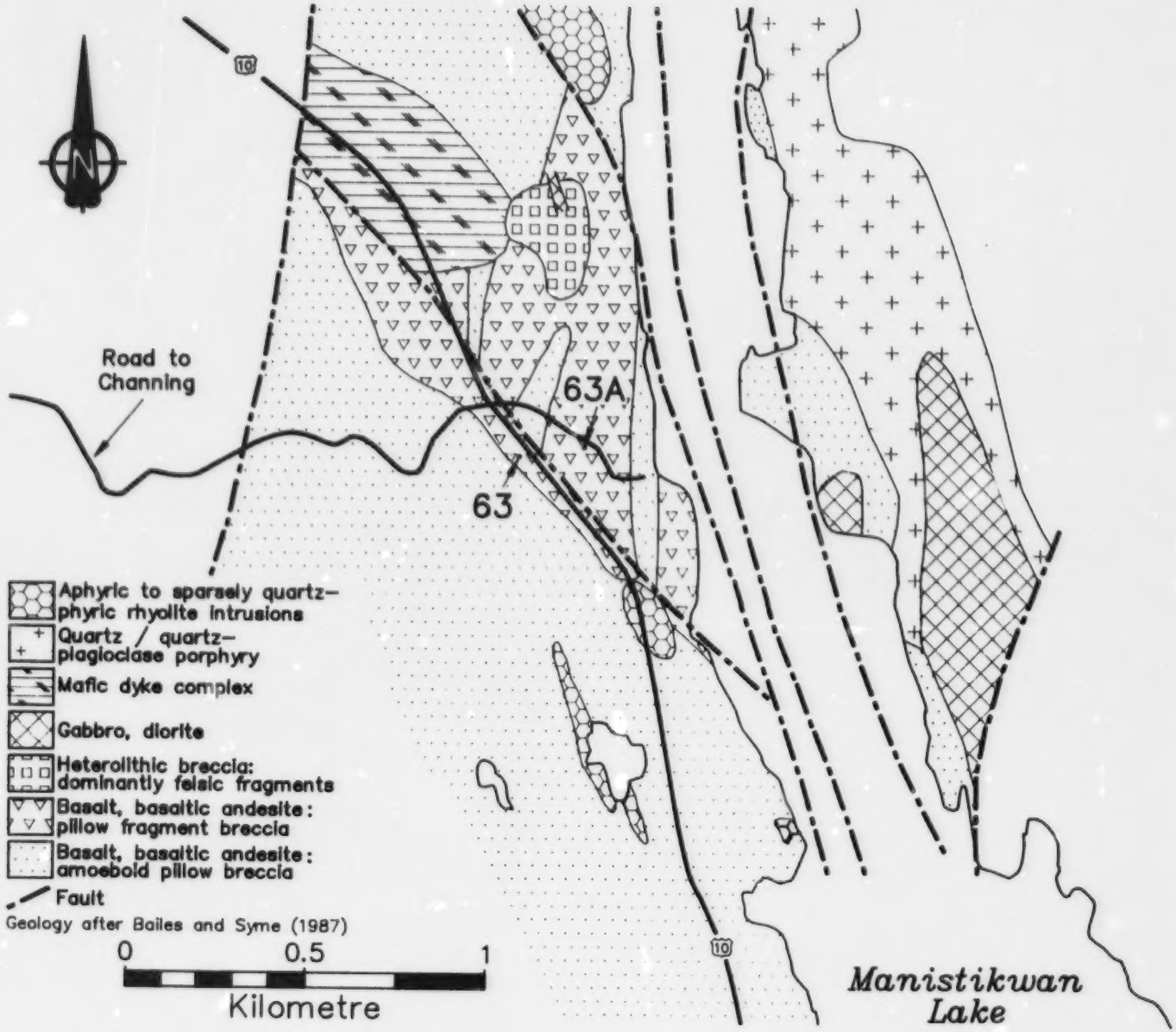


Figure 63–1: Geological setting of occurrence #63 (63K/13SW).

LOCATION: 63 NAME:
UTM: 6070671N/319590E AREA: Near junction of Hwy. 10 and Channing Road. AIRPHOTO: A26397-226

ACCESS:
Via Highway 10.

EXPLORATION SUMMARY:
Two copper occurrences indicated by Tanton (1941). A number of trenches were put down in the area prior to 1951, but these are now filled with soil. Three drill holes, totalling 223 m, were reportedly drilled in the vicinity during 1951-52.

GEOLOGICAL SETTING:
The area is underlain predominantly by basalt and basaltic andesite pillowed flows and fragmental rocks.

MINERALIZATION:
The old trench containing pyrite and sphalerite (locality 63) was covered by the old paved Highway 10. R.G. Crosby indicated that the mineralized zone had a width of about 30 m. The new roads on Highway 10 expose altered rocks but little sulphide mineralization. The trench at locality 63A (2 x 5 x 2? m) was dug in overburden and is now water filled.

GEOCHEMICAL DATA:
None.

CLASSIFICATION:
Not certain.

REFERENCES:

Baile, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Crosby, R.G.
1952: Unpublished geological report on the Dianna occurrence. Manitoba Energy and Mines, Minerals Division, unpublished data.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

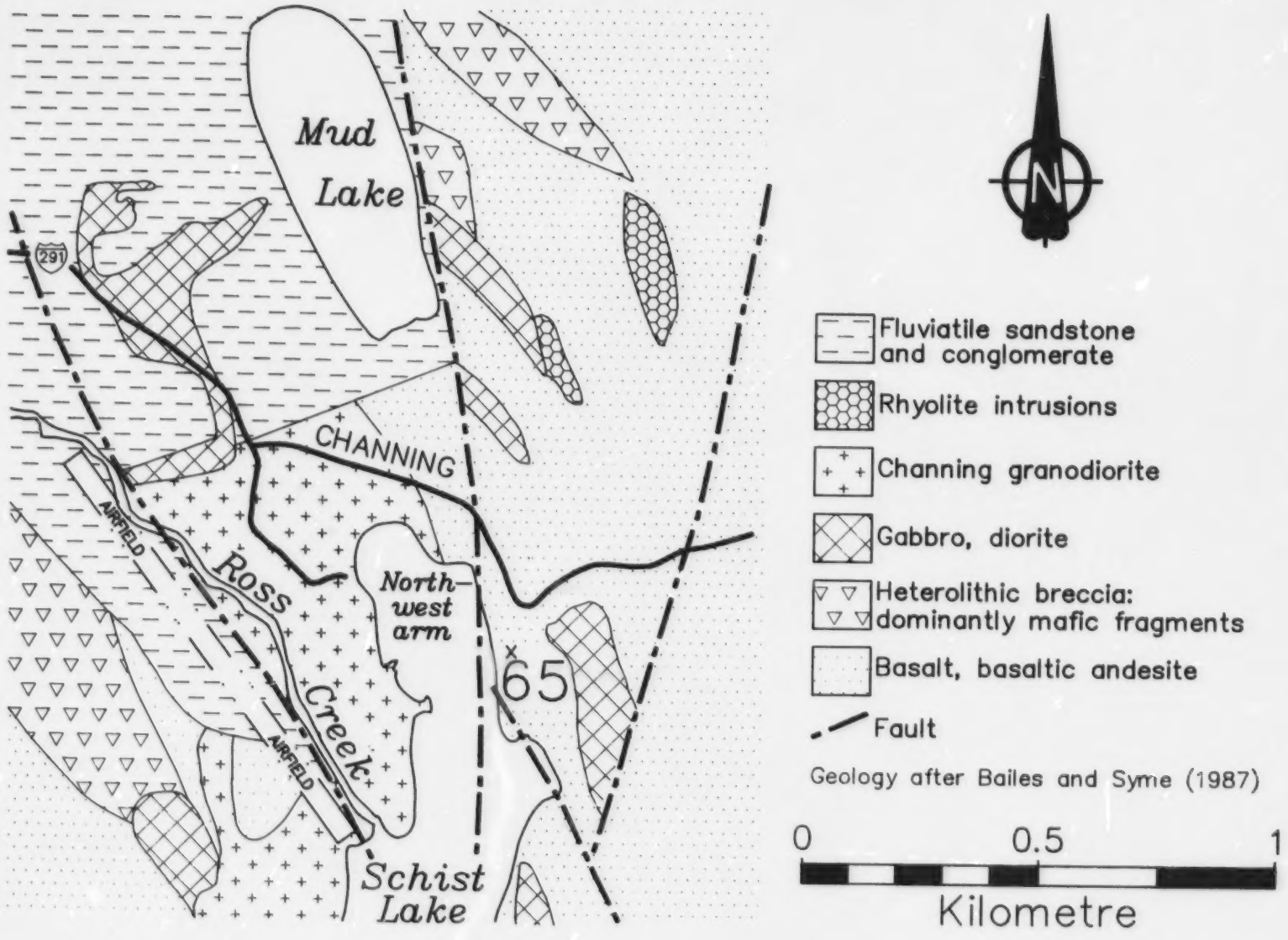


Figure 65–1: Geological setting of occurrence #65 (63K/13SW).

LOCATION: 65
UTM: 607464N/318220E

NAME:
AREA: Northeast shore of Schist Lake.

AIRPHOTO: A26397-226

ACCESS:
Via road to Channing.

EXPLORATION SUMMARY:
A copper occurrence indicated by Tanton (1941). An E.M. survey was completed and several drill holes were drilled on conductors prior to 1957. The area was searched but no old workings were found in 1984.

GEOLOGICAL SETTING:
Area is underlain by basaltic pillow lavas. The occurrence location shown by Tanton (1941) is adjacent to a major fault (Fig. 65-1).

MINERALIZATION:
None.

GEOCHEMICAL DATA:
None.

CLASSIFICATION:
Not classified.

REFERENCES:
Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

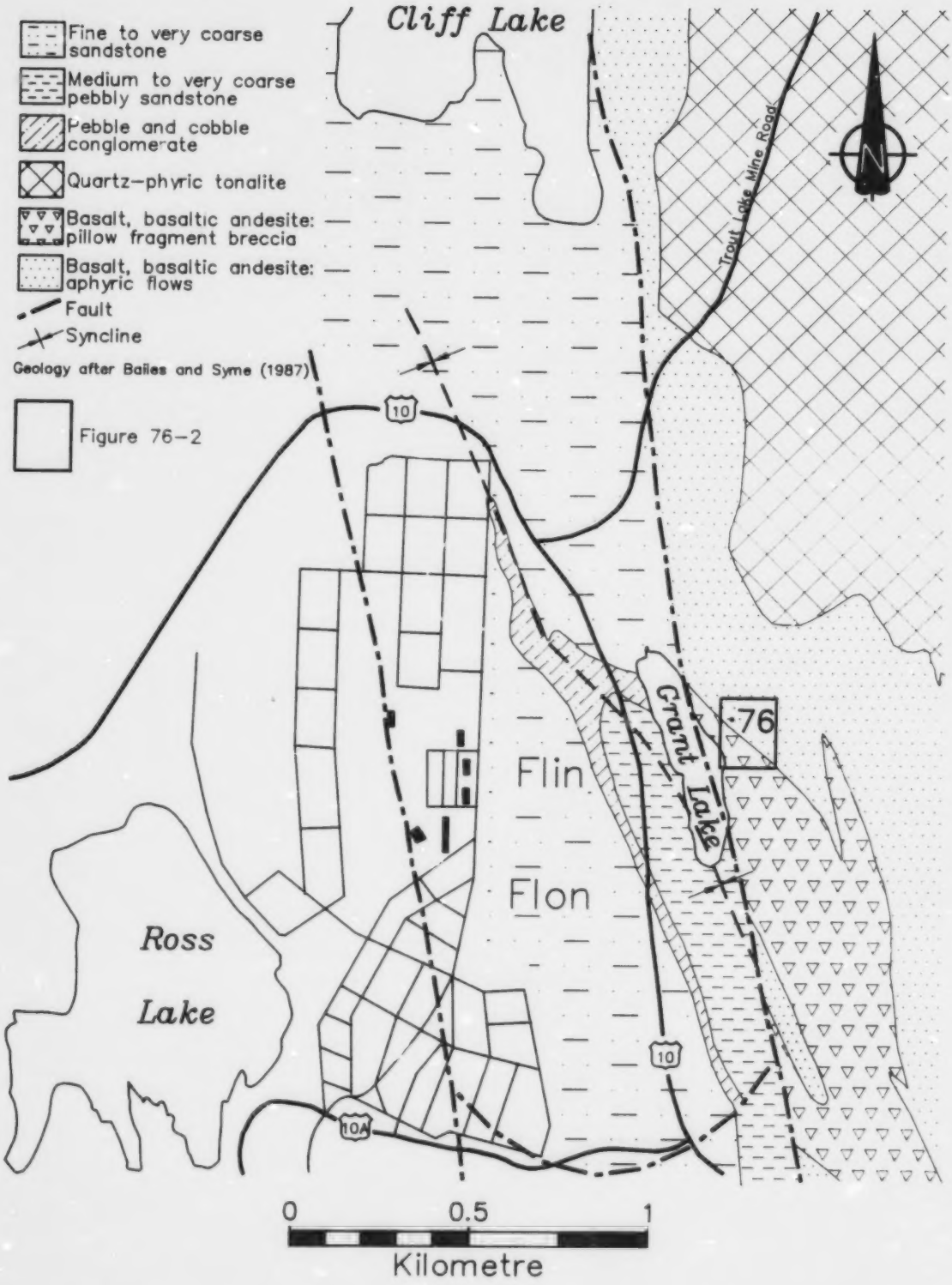


Figure 76–1: Geological setting of occurrence #76 (63K/13SW).

LOCATION: 76 NAME:
UTM: 6073703N/317757 AREA: Approximately 100 m east of Grant Lake. AIRPHOTO: A26397-251

ACCESS:

Via Highway 10.

EXPLORATION SUMMARY:

Tanton (1941) noted a pyrrhotite occurrence on the east side of Grant Lake. Several trenches dug on the property (Fig. 76-2) indicate a mineralized zone more than 250 m long. One hole was drilled prior to 1951 and six holes (738 m) were drilled during 1951-52.

GEOLOGICAL SETTING:

The Cliff Lake fault zone passes through Grant Lake. East of the lake plagioclase-pyroxene-phyric flows and pyroxene-phyric flows with pillow fragment breccia are the dominant rock type. Fine- to coarse-grained, pebbly, fluviatile sandstones of the Missi Group occur west of the fault.

MINERALIZATION:

The fine grained intermediate volcanic rock with siliceous (cherty ?) bands contained 10 to 40% pyrrhotite and minor pyrite, chalcopyrite and sphalerite. Some solid pyrrhotite is present in rubble around the trenches.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Probably a sulphide facies iron formation, but may also be a distal portion of a volcanogenic massive sulphide deposit.

REFERENCES:

Bailes, A.H. and Syme, E.C.

1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Tanton, T.L.

1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

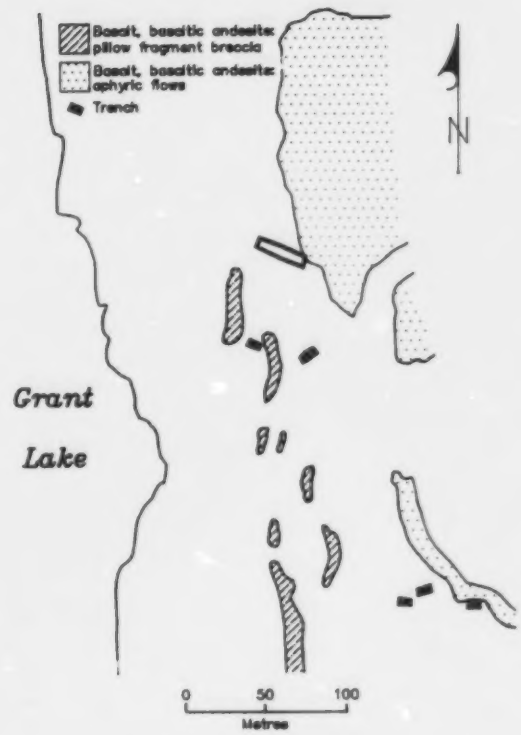


Figure 76–2: Trench locations at occurrence #76 (63K/13SW).

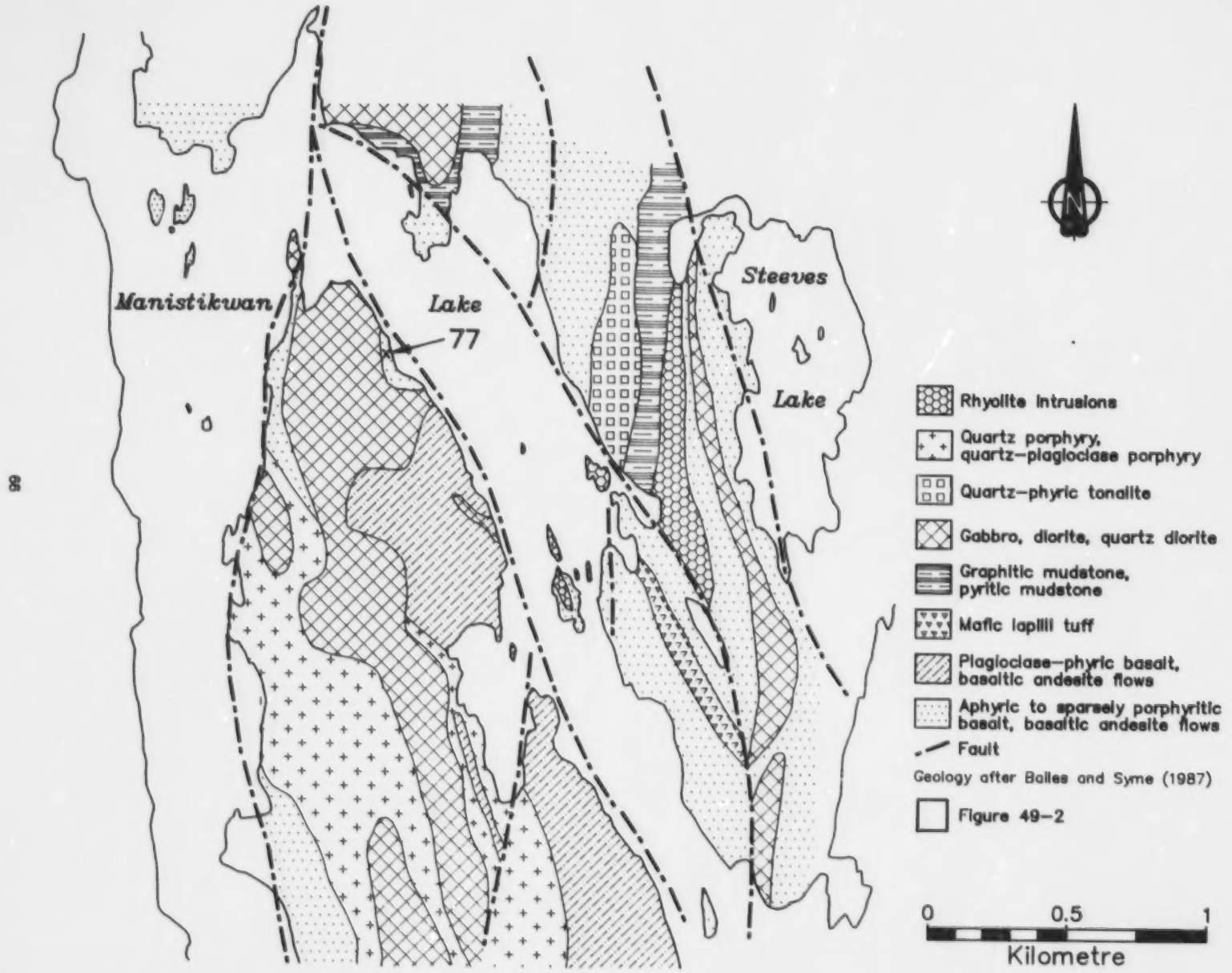


Figure 77–1: Geological setiing of occurrence #77 (63K/13SW).

LOCATION: 77 NAME:
UTM: 607251N/320740E AREA: Northeast tip of Big Island in Manistikwan Lake. AIRPHOTO: A26364-173

ACCESS:
Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:
Copper occurrence reported by local prospector. No workings found in area in 1984.

GEOLOGICAL SETTING:
Mafic volcanic rocks adjacent to a large body of gabbroic rocks.

MINERALIZATION:
Minor sericitic schists with trace pyrite observed in one outcrop.

GEOCHEMICAL DATA:
None.

REFERENCES:
Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

LOCATION: 81
UTM: 6078937N/332780E

NAME:
AREA: Approximately 1.5 km north of the northeast arm of Manistikwan Lake.

AIRPHOTO: A26397-155

ACCESS:
Via boat on Manistikwan Lake and overgrown trail.

EXPLORATION SUMMARY:
Gold occurrence indicated by Tanton (1941). Area searched in 1981 but no workings found.

GEOLOGICAL SETTING:
Area underlain mainly by mafic volcanic rocks (see Gilbert, 1987).

MINERALIZATION:
Not found.

GEOCHEMICAL DATA:
None.

CLASSIFICATION:
Not classified.

REFERENCES:

Gilbert, H.P.
1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

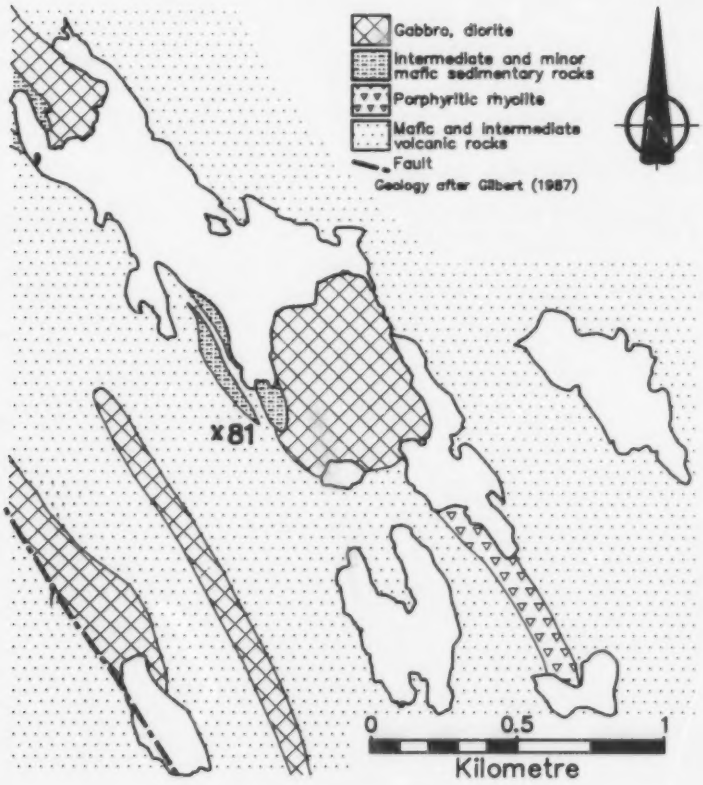


Figure 81–1: Geological setting of occurrence #81 (63K/13SW).

LOCATION: 84 NAME:
UTM: 6084046N/317862E AREA: Approximately 300 m south of Precipice Lake. AIRPHOTO: A26364-79

ACCESS:

Via plane to Precipice Lake.

EXPLORATION SUMMARY:

H.B.E.D. completed an E.M. survey of the POT claims in 1951. A 488 m conductor was located across claims Pot 67 and 68. Three drill holes (240 m) intersected this geophysical anomaly and hole B4 (52 m) tested a small conductor on Pot 72.

GEOLOGICAL SETTING:

The area is underlain mainly by mafic to intermediate volcanic rocks. A quartz porphyry intrusion is exposed north of the occurrence (Fig. 84-1).

MINERALIZATION:

Drill holes 1 and 2 intersected near solid pyrrhotite and pyrite in siliceous chloritic and hornblendic schists. Hole 2 contained trace chalcopyrite. Garnets, sericite schists and quartzite are also present. The pyritic chloritic schists may be an indication of hydrothermal alteration. Area should be investigated for structurally controlled gold-bearing zones of alteration. Several small tourmaline-bearing quartz veins were intersected in drill core. Hole B4 intersected minor to disseminated pyrite and pyrrhotite in 'siliceous hornfels' and chlorite schist.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formation.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

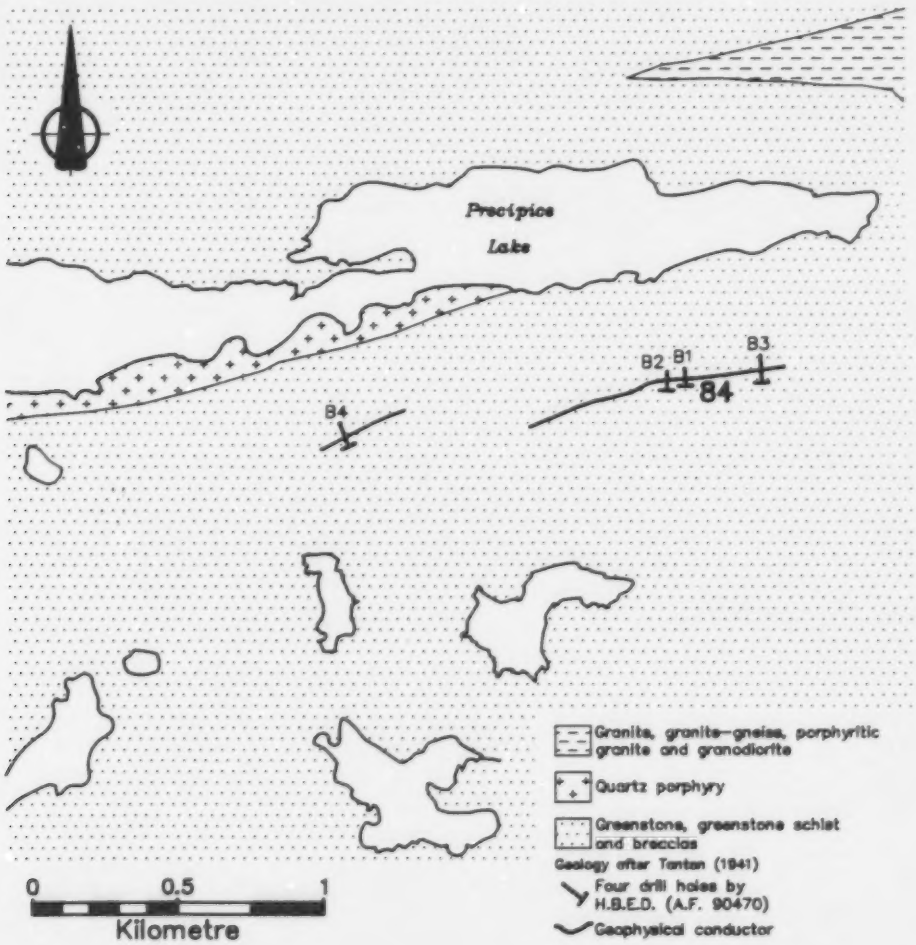


Figure 84–1: Geological setting of occurrence #84 (63K/13SW).

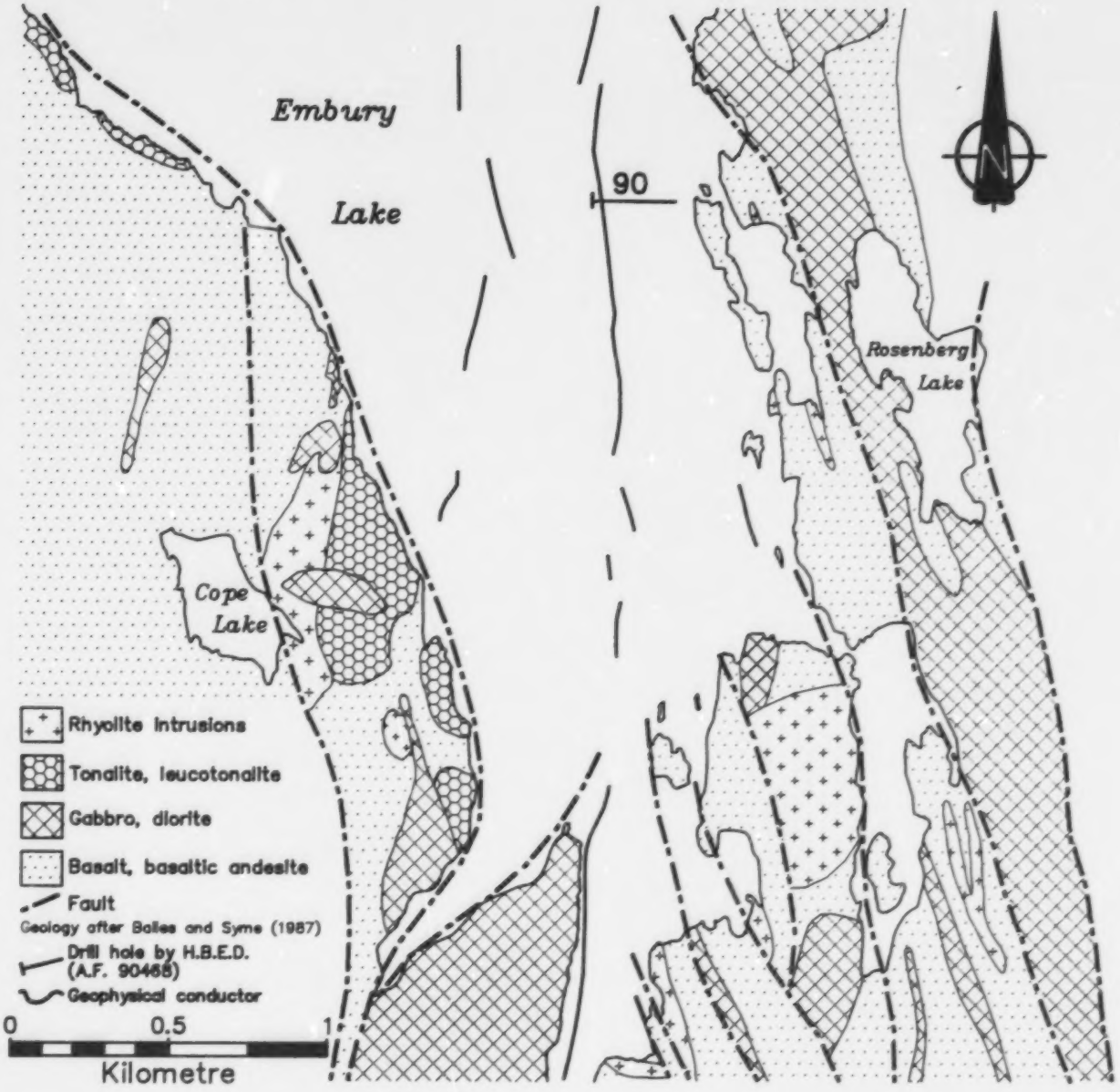


Figure 90–1: Geological setting of occurrence #90 (63K/13SW).

LOCATION: 90
UTM: 6076600N/321440E

NAME:
AREA: Near east shore of Embury Lake.

AIRPHOTO: A26364-167

ACCESS:

Via boat on Embury Lake.

EXPLORATION SUMMARY:

H.B.E.D. completed an E.M. survey on the Last claims in 1950. A 450 m hole was drilled through an E.M. anomaly on claim Last 30.

GEOLOGICAL SETTING:

Rocks on the east shore of Embury Lake are aphyric to sparsely porphyritic basalt and basaltic andesite flows that have been intruded by mafic and felsic intrusions (Fig. 90-1). Andesitic and dacitic rocks and graphitic and chloritic schists were intersected in the drill hole.

MINERALIZATION:

The drill cores contained graphitic chlorite schist with minor pyrite. A number of short sections contained quartz and carbonate stringers with scattered pyrite crystals.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formation.

REFERENCES:

Assessment File 90468
Manitoba Energy and Mines, Minerals Division.

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

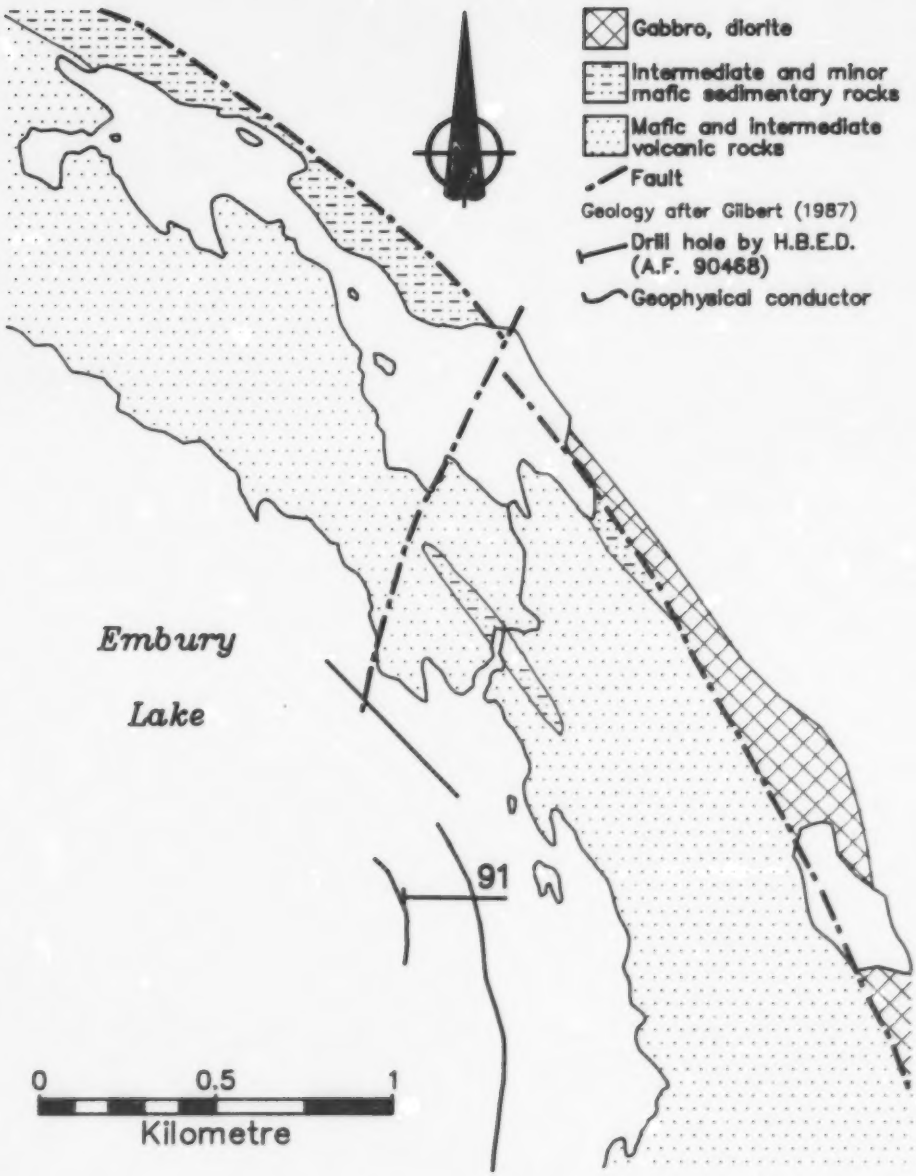


Figure 91–1: Geological setting of occurrence #91 (63K/13SW).

LOCATION: 91 NAME:
UTM: 6077952E/321470E AREA: Near east shore of Embury Lake. AIRPHOTO: A26364-168

ACCESS:

Via boat on Embury Lake.

EXPLORATION SUMMARY:

H.B.E.D. drilled a 450 m hole through an E.M. anomaly on claim Last 28 in 1950.

GEOLOGICAL SETTING:

Mafic and intermediate volcanic rocks are the dominant rock types along the eastern shore of Embury Lake. Minor intermediate and mafic sedimentary rocks and mafic intrusive rocks are also present.

MINERALIZATION:

Minor pyrite was noted at several places throughout the drill core in graphitic chlorite schist and sheared chloritic andesite. A 50 cm thick section of graphitic schist contained disseminated pyrite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formation.

REFERENCES:

Assessment File 90468
Manitoba Energy and Mines, Minerals Division.

Gilbert, H.P.
1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

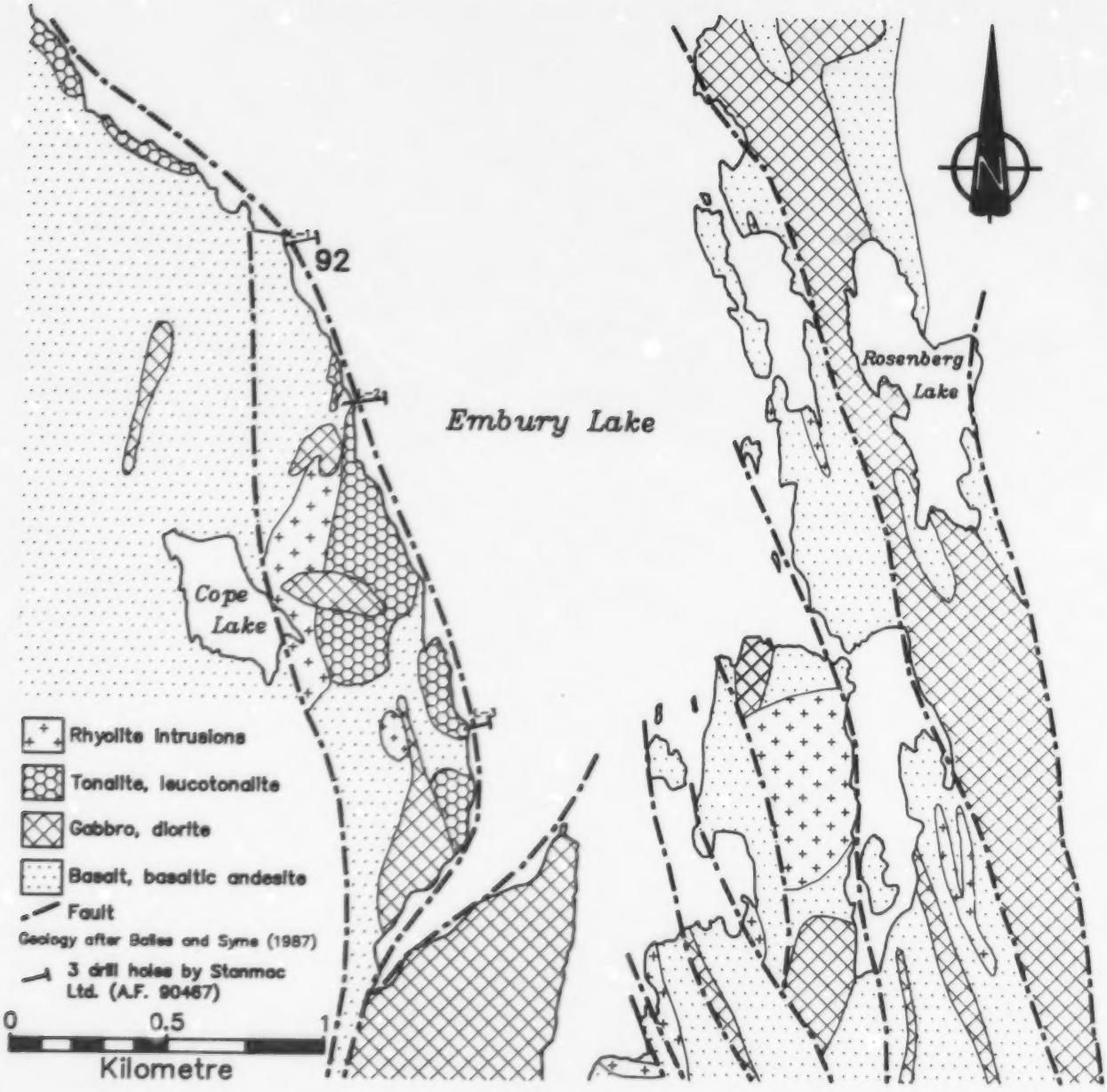


Figure 92–1: Geological setting of occurrence #92 (63K/13SW).

LOCATION: 92 NAME:
UTM: 607526N/320424E AREA: Southwest shore of Embury Lake. AIRPHOTO: A26397-223

ACCESS:

Via boat on Embury Lake.

EXPLORATION SUMMARY:

Stanmac Limited completed an E.M. survey and drilled three holes totalling 459 m on the Last claims in 1948.

GEOLOGICAL SETTING:

The rocks on the west shoreline include aphyric to sparsely porphyritic flows, diorite, quartz-phyric leucotonalite with small, highly digested xenoliths and aphyric to quartz-phyric rhyolite intrusions (Fig. 92-1).

MINERALIZATION:

The drill holes intersected the Embury Lake fault zone, graphitic schist, silicic volcanic (?) rocks and a felsic feldspar porphyry. The graphitic schist contains disseminated pyrite and the feldspar porphyry contains disseminations and stringers of pyrite. A 40 m section at the bottom of hole L2 contains black tuff and agglomerate that is locally siliceous and underlain by massive silicic tuff with quartz stringers. It is possible that this 'black tuff' represents a magnesium chlorite alteration.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Multiple stringers of pyrite and pyrrhotite in felsic feldspar porphyry and a sulphide facies iron formation.

REFERENCES:

Assessment Files 90467, 90468
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

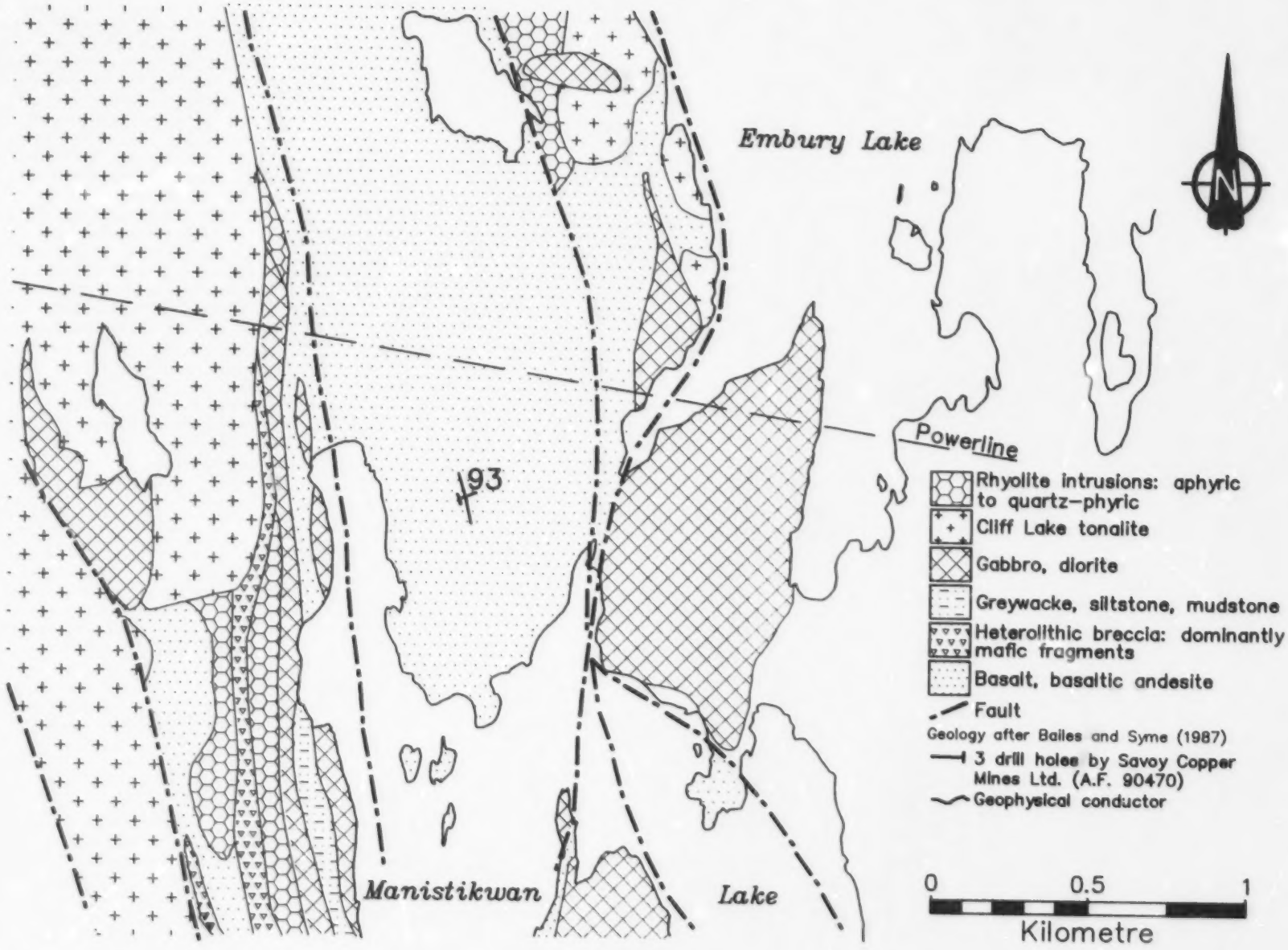


Figure 93–1: Geological setting of occurrence #93 (63K/13SW).

LOCATION: 93
UTM: 6074007N/320102E

NAME:
AREA: Southwest corner of Embury Lake.

AIRPHOTO: A26364-172

ACCESS:
Via boat on Manistikwan Lake.

EXPLORATION SUMMARY:
Diamond drill hole drilled by Savoy Copper Mines Ltd. in 1960 to test an E.M. conductor on the Pal 5 claim.

GEOLOGICAL SETTING:
Area is underlain mainly by basaltic andesite flows.

MINERALIZATION:
The drill hole intersected 1.4 m of pyritic schist with minor graphite.

GEOCHEMICAL DATA:
None.

CLASSIFICATION:
Sulphide facies iron formation.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

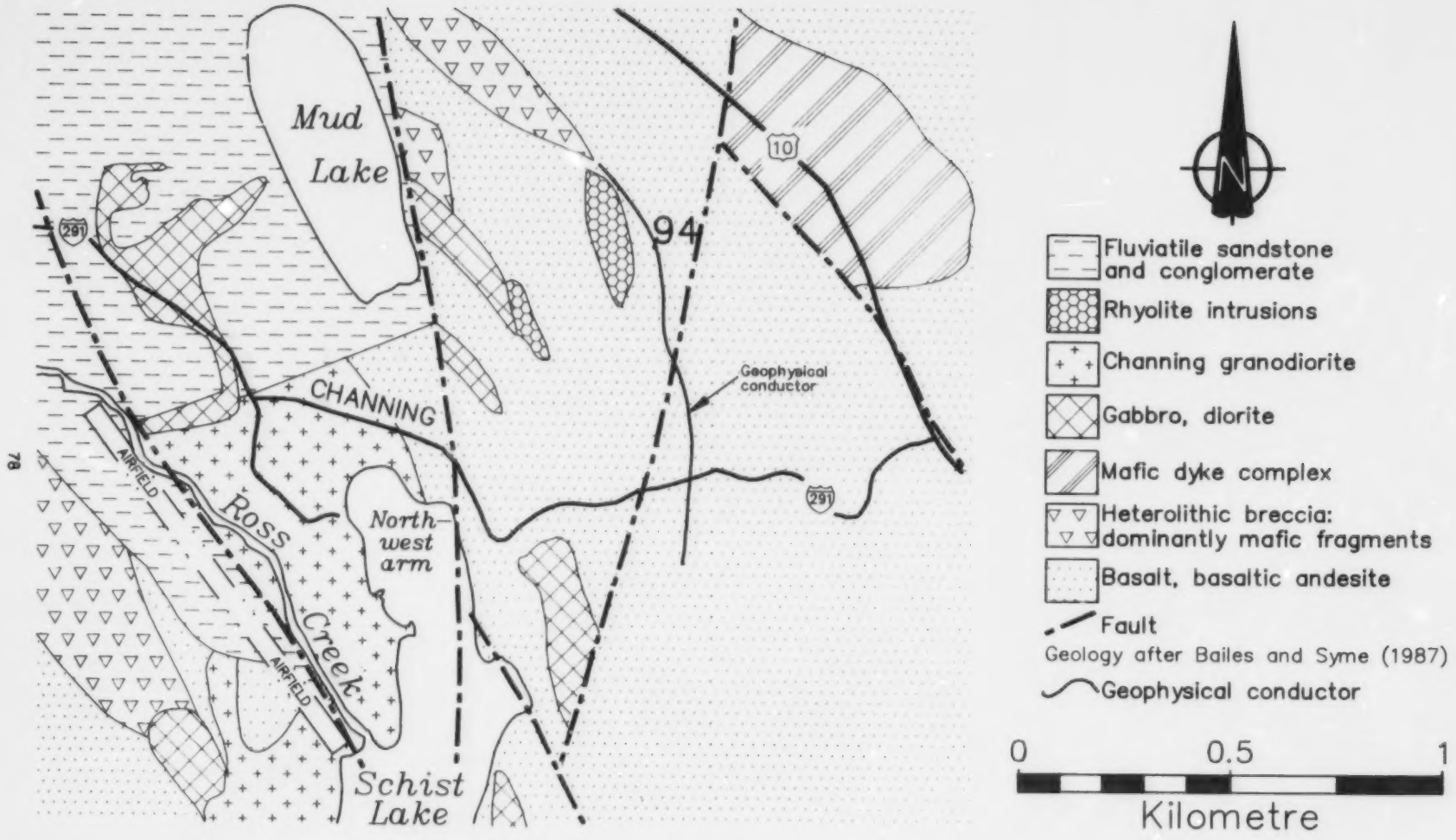


Figure 94–1: Geological setting of occurrence #94 (63K/13SW).

LOCATION: 94
UTM: 6071283N/318641E

NAME:
AREA: Southeast of Flin Flon.

AIRPHOTO: A26397-226

ACCESS:

Via Channing road and Highway 10.

EXPLORATION SUMMARY:

A trench was dug on a small outcrop in an area of muskeg prior to 1957. A 300 m E.M. conductor was tested with 3 drill holes for a total of 227 m of drilling in 1951-52. An E.M. survey, geological mapping and drilling were conducted in 1979-80 (AF 92316).

GEOLOGICAL SETTING:

The area is underlain mainly by basaltic andesite pillow lavas (Fig. 94-1). O'Donnell (A.F. 92316) reported rhyodacite and dacite in the vicinity of the mineralized rocks (Fig. 94-2).

MINERALIZATION:

Pyrrhotite and minor pyrite (2-20%) are disseminated throughout the surface exposures. Drilling by Fairway Flin Flon Mines Ltd. in 1952 found the conductor to be caused by pyrrhotite and pyrite with minor copper and zinc (Crosby, 1952).

GEOCHEMICAL DATA:

See Figure 94-2.

CLASSIFICATION:

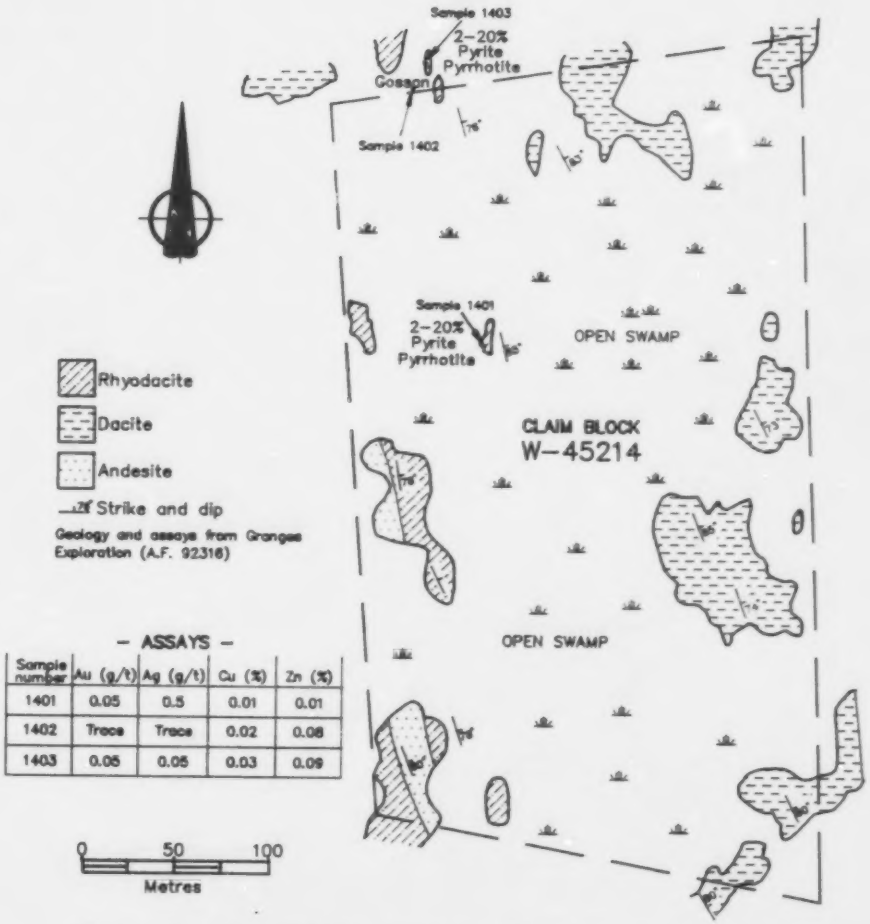
Sulphide facies iron formation.

REFERENCES:

Assessment File 92316
Manitoba Energy and Mines, Minerals Division.

Bailes, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Crosby, R.G.
1952: Geological report on the Deanna occurrence; Manitoba Energy and Mines, unpublished data.



– ASSAYS –

Sample number	Au (g/t)	Ag (g/t)	Cu (%)	Zn (%)
1401	0.05	0.5	0.01	0.01
1402	Trace	Trace	0.02	0.08
1403	0.05	0.05	0.03	0.09

Figure 94–2: Detailed geology, and sample locations at occurrence #94 (63K/13SW).

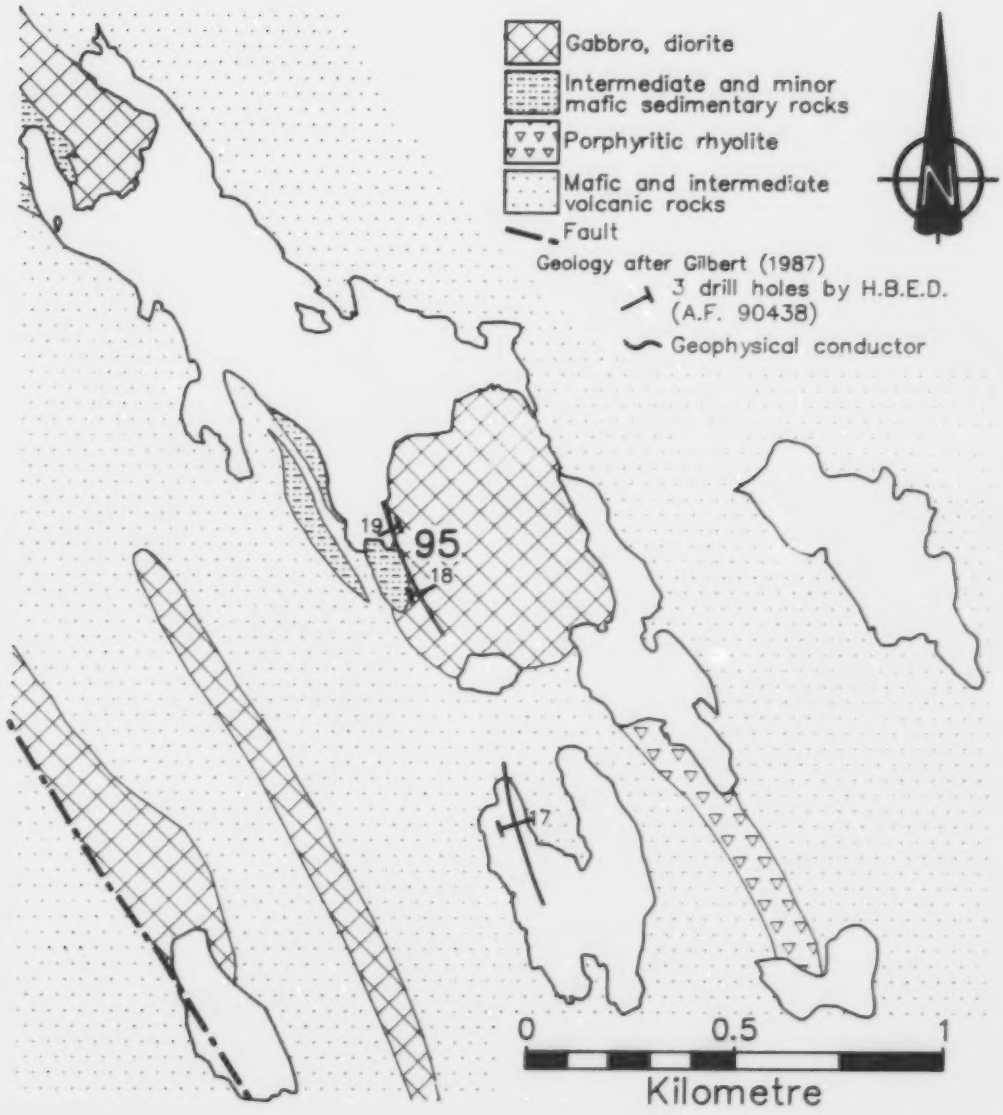


Figure 95–1: Geological setting of occurrence #95 (63K/13SW).

LOCATION: 95
UTM: 6079131N/322975E

NAME:
AREA:

AIRPHOTO: A26397-155

ACCESS:

Via boat to northeast arm of Manistikwan Lake and traverse.

EXPLORATION SUMMARY:

E.M. Survey was carried out and three holes totalling 255 m drilled by H.B.E.D. in 1953 (AF 90438).

GEOLOGICAL SETTING:

Area is shown to be underlain by basaltic andesite and gabbro (Gilbert, 1987). Dacite, sericite-chlorite schist, graphite + chlorite schists and siliceous graphitic schist were reported in the drill logs (AF 90438).

MINERALIZATION:

Thin stringers of pyrite and pyrrhotite in graphitic schists and minor pyrite and pyrrhotite were intersected in drill hole 17 (Fig. 95-1). Slight to thin stringers of pyrite and pyrrhotite were found in siliceous graphitic and chloritic schists in drill hole 18. Similar mineralization was found in drill hole 19.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formation.

REFERENCES:

Assessment File 90438
Manitoba Energy and Mines, Minerals Division.

Gilbert, H.P.
1987: Tartan Lake-Lac Aimée Geological Map; Manitoba Energy and Mines, Geological Services, Preliminary Map 1987F-3.

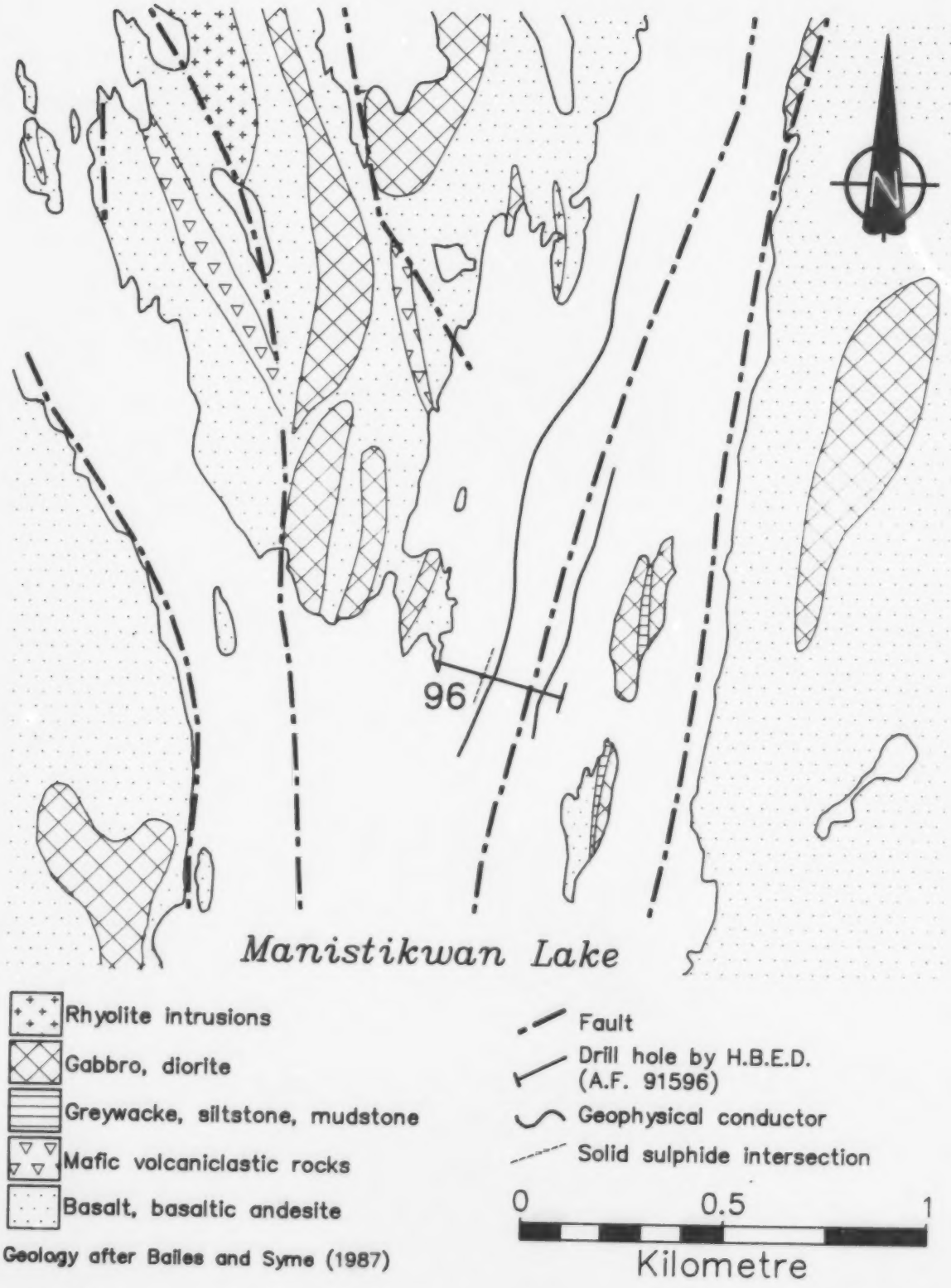


Figure 96–1: Geological setting of occurrence #96 (63K/13SW).

LOCATION: 96 NAME:
UTM: 6070374N/322441E AREA: Manistikwan Lake. AIRPHOTO: A26364-174

ACCESS:

Via boat on Manistikwan Lake

EXPLORATION SUMMARY:

A 388 m hole drilled by H.B.E.D. in 1949 to test an E.M. Conductor.

GEOLOGICAL SETTING:

According to the geological mapping of the adjacent land area, the area should be underlain by basalt and basaltic andesite volcanic rocks. The drill core contained abundant siliceous tuff, siliceous fragmental rocks, bedded tuffs, and graphitic tuffs.

MINERALIZATION:

The drill hole intersected 15 cm of near solid pyrite, 167 cm of near solid to solid pyrite and 5 m of near solid to solid pyrite over a core length of 10 m. The solid sulphide layers were interbedded with siliceous and sericitic tuffs and fragmental rocks and immediately overlain by a 1 m thick layer of graphitic tuff; other graphitic tuff layers were intersected in the 250 m interval below the solid sulphides.

GEOCHEMICAL DATA:

A 5 m section of the near solid to solid sulphide contained 0.6 gm of gold, trace silver, copper and zinc (AF 91596).

CLASSIFICATION:

Volcanogenic massive sulphide type deposit. The pyrite layers were noted as "replacement type" sulphides in the drill logs; this is typical 'fresh' pyrite found in Cu-Zn deposits. The pyrite lenses could be the distal "barren" portions of a Cu-Zn-bearing massive sulphide deposit.

REFERENCES:

Assessment File 91596
Manitoba Energy and Mines, Minerals Division.

Balles, A.H. and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

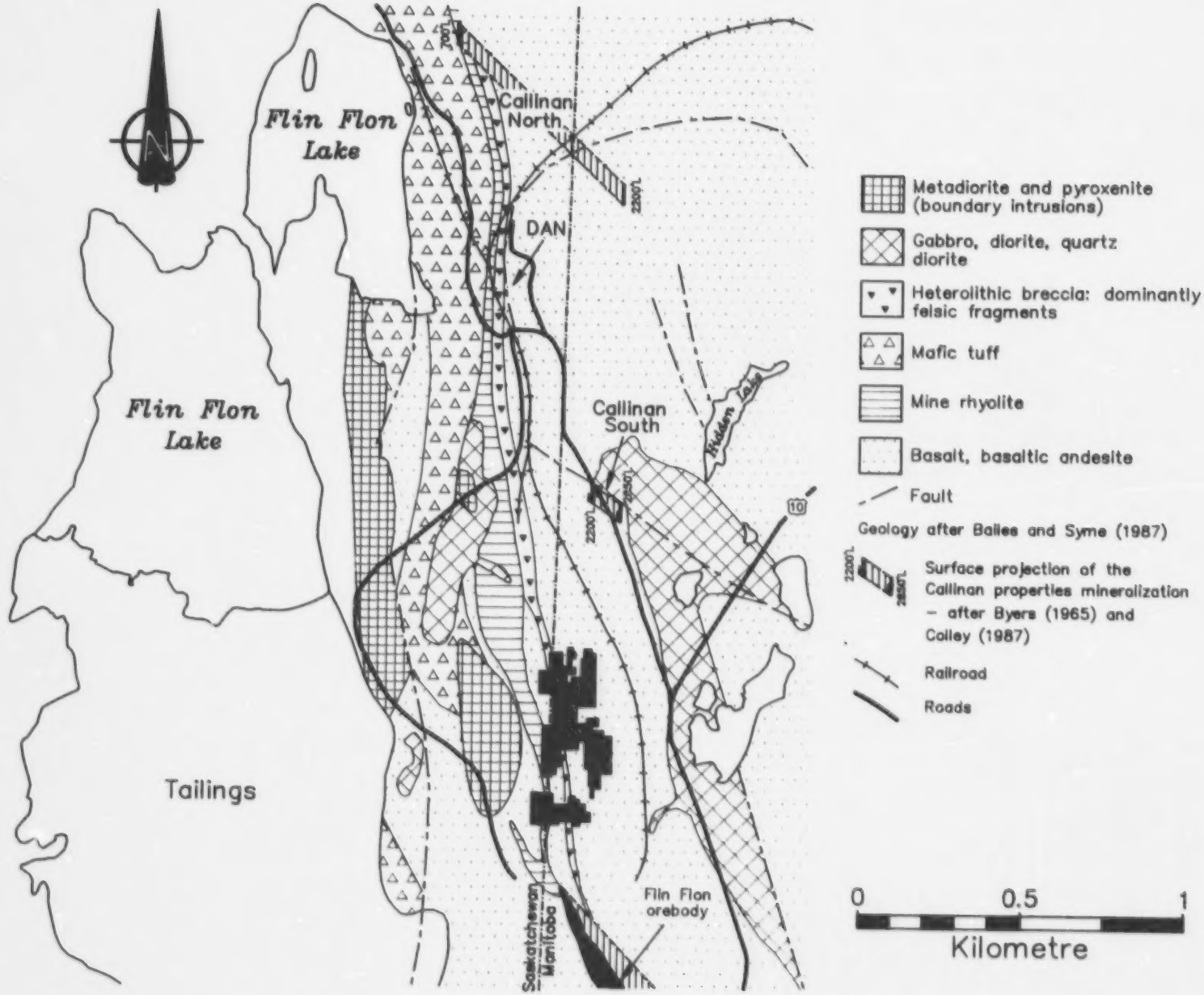


Figure 97-1: Gelogical setting of the Callinan Deposit (#97 - 63K/13SW).

LOCATION: 97
UTM: Callinan North: 6074778N/314528E
Callinan South: 6073632N/314615E

NAME: Callinan Deposit
AREA: The sulphide lenses are located between 1200 m and 2800 m north of the North Main Shaft of the Flin Flon Mine and straddle the provincial border.

AIRPHOTO: A26364-85, 100, 101

ACCESS:

Via H.B.M.&S. Flin Flon Mine roads.

EXPLORATION SUMMARY:

Trenching and drilling were initially conducted between 1927 and 1929 on exposures of mineralization on the Dan claim near the border in Saskatchewan. Although Consolidated Callinan Flin Flon Mines Ltd. reported in 1938 a zone of copper-zinc mineralization 195 m long and 30-100 cm thick, the drilling of 26 464 m of core beween 1937 and 1974 outlined only a small deposit of 36 300 tonnes (40 000 tons) of 0.27% Cu and 8.5% Zn down to the 275 m level. However, other small zones of mineralization and alteration had been encountered (Byers et al., 1965; H.B.E.D., 1987).

In 1976-79 an exploration drift on the 1690 foot level of the Flin Flon Main Mine was extended north for 1472 m to explore the Callinan mineralization at depth. 17 882 m of diamond drilling from this drift had outlined two zones of mineralization in at least six sulphide lenses by 1986.

In 1984 and 1985 diamond drilling (23 109 m) from surface approximately 1210 m (4000 ft.) north of the underground drilling identified three sulphide lenses beween the 200 m and 600 m levels. H.B.M.& S. and Manitoba Minerals announced a joint venture in 1988 to bring the property into production before the end of 1989.

GEOLOGICAL SETTING:

The general geology of the area (Fig. 97-1) has been described by Byers et al. (1965), Stockwell (1948) and Bailes and Syme (1987). The geology of the mineralized zones has been described by Colley (1987) and this account is extracted mainly from that source. Since the two main areas of mineralization are some 1200 m apart, the southernmost is referred to as the 'Callinan South' deposit and the northernmost as the 'Callinan North' deposit.

The two deposits occur at approximately the same stratigraphic position as the Flin Flon Mine, i.e. within the lower rhyolite-bearing volcanic sequence and below the overlying Hidden Lake andesites (Stockwell, 1948; Bailes and Syme, 1987).

The Callinan South deposit occurs in a 275 m thick sequence containing two quartz-phyric rhyolite units that are separated by 50 m of andesite flow and 30-50 m of andesitic pyroclastic rocks (Fig. 97-2). The quartz-porphyritic rocks associated with the sulphide lenses are similar to the rhyolitic flows that host the sulphide lenses of the Flin Flon Mine. The uppermost quartz porphyry is approximately 60 m thick and is locally overlain by large fragments of rhyolite in an andesitic matrix (cf. mill-rock hill breccia, Gale et al., 1982). The lowermost quartz-phyric rhyolite is underlain by dacitic lapilli tuff, minor argillaceous and carbonaceous layers and an andesitic breccia.

The Callinan North deposit probably occurs along strike from the Callinan South deposit, but the deposit is not exposed at surface and the general area of its projected outcrop has not been mapped in detail. The deposit geology is shown in Figure 79-3. The rocks stratigraphically underlying the mineralization are an andesitic lapilli tuff with carbonate-filled amygdales in angular fragments. The sulphide lenses are hosted by a quartz- and feldspar-phyric rhyolitic rock that contains a thin graphitic argillite layer near its base.

The stratigraphically overlying rocks are predominantly andesitic flows. A 30-40 m thick dacitic flow that contains amphibole phenocrysts occurs within the andesitic flows and was also observed in the cores from the hanging wall of the Callinan deposit.

MINERALIZATION:

Mineralization on the Dan claim consisted of disseminated grains and veins of solid sulphide that consisted mainly of pyrite and pyrrhotite with minor amounts of chalcopyrite and sphalerite within a zone of sheared and altered volcanic rocks (Byers et al., 1965). This zone of altered rock consists of chlorite schist, chlorite-sericite schist and sericite schist and probably represents a metamorphosed massive sulphide type alteration zone. Other small zones of disseminated to solid sulphide (pyrrhotite, pyrite, chalcopyrite and sphalerite) are associated with stringers and veins of quartz in the hanging wall of the main zone (Byers et al., 1965).

The Callinan deposit consists of several stacked lenses of near solid to solid, fine grained banded sulphides. Pyrite, sphalerite, pyrrhotite and chalcopyrite are the dominant minerals; minor galena and arsenopyrite are also present. Although the sulphide lenses are stacked (Fig. 97-2) the metal grades are generally consistent but have a slight increase in both chalcopyrite and precious metal contents in the lower lenses. Footwall alteration products including chlorite and sericite schists and stringers of chalcopyrite, pyrrhotite, sphalerite and pyrite occur stratigraphically below the near solid to solid sulphide lenses in the uppermost rhyolitic rock unit.

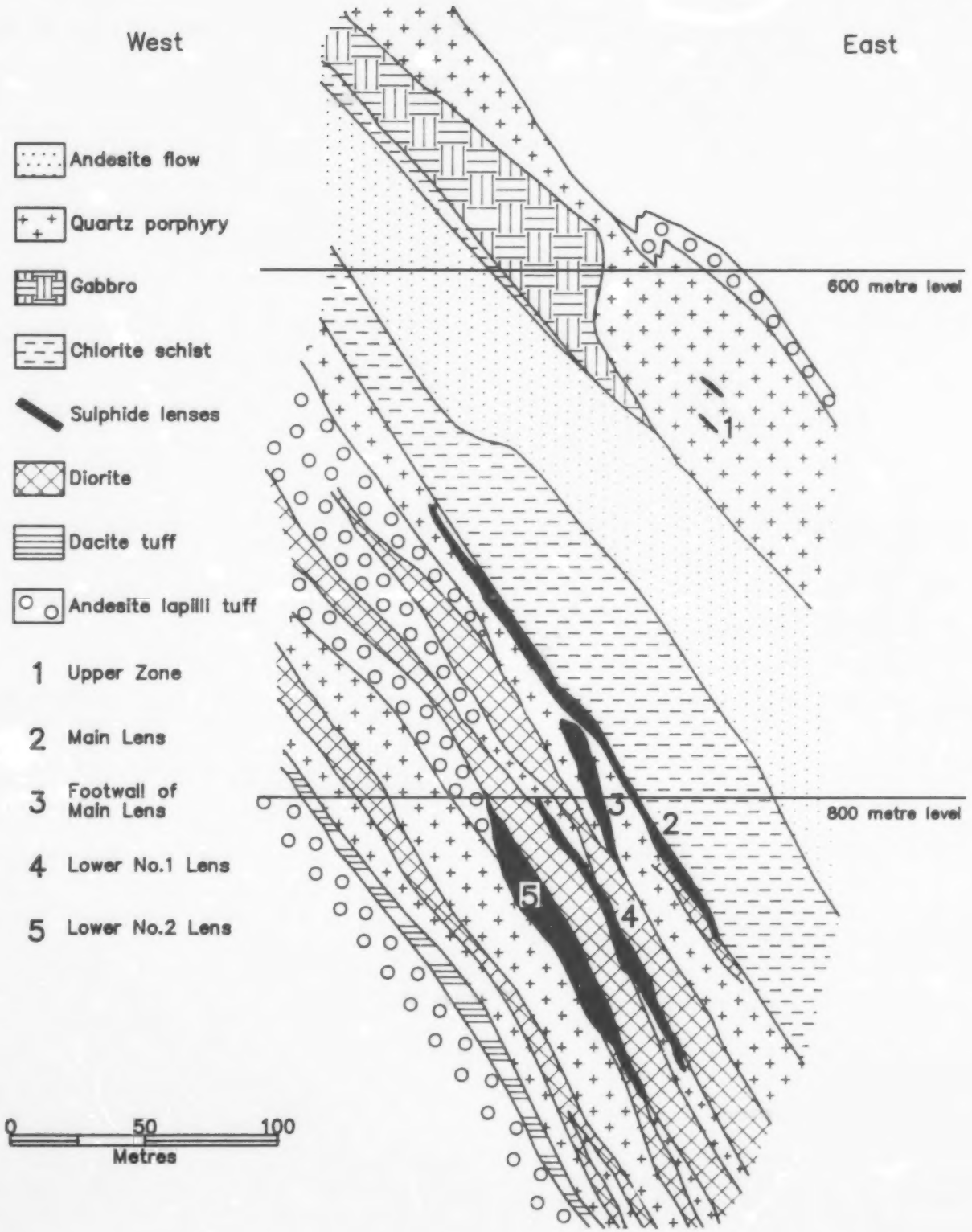


Figure 97–2: Callinan South cross-section looking north (from Colley, 1987).

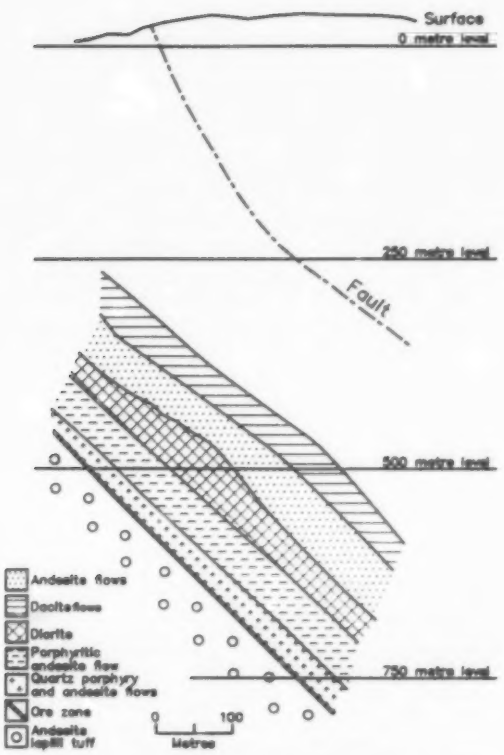


Figure 97–3: Callinan North generalized cross-section looking north (from Colley, 1987).

The main lens, the uppermost of four lenses within the lower rhyolitic unit, dips 56° east and plunges 20° to the southeast. It occurs near the stratigraphic top of the lower rhyolitic unit.

It has a strike length of 200 m and an average thickness of approximately 3 m and extends from the 670 m level to below the 800 m level.

The Callinan North deposit consists of three sulphide lenses dipping 40° east and plunging 35° southeast. The mineralization consists mainly of fine grained banded sulphides; sphalerite occurs as bands in pyritic sulphides and pyrrhotite is associated with the higher grade chalcopyrite mineralization.

The lower footwall lens of this deposit has a known strike length of approximately 275 m, an average horizontal width of 7 m, extends from the 425 m level to the 600 m level, and has not been explored below the 600 m level. This lens contains 798 000 tonnes of 1.37 oz/tonne Au, 21.2 oz/tonne Ag, 1.55% Cu and 4.0% Zn.

GEOCHEMICAL DATA:

Proven reserves are currently 2.4 M tonnes of 4% Zn, 1.55% Cu, 155 g/tonne Au and 19 g/tonne Ag (Northern Miner, March 21, 1988).

CLASSIFICATION:

Volcanogenic massive sulphide type deposits with multiple sulphide lenses and associated alteration zones.

REFERENCES:

Bailes, A.H., and Syme, E.C.
1987: Geology of the Flin Flon-White Lake area; Manitoba Energy and Mines, Geological Services, Geological Map GR87-1-1.

Byers, A.R., Kirkland, S.J.T. and Pearson, W.J.
1965: Geology and mineral deposits of the Flin Flon Area, Saskatchewan; Saskatchewan Department of Mineral Resources, Report No. 62.

Colley, D.
1987: Callinan Property; Hudson Bay Mining and Smelting Co. Ltd., Flin Flon, Manitoba, unpublished report, 16 p.

Stockwell, C.H.
1959: Flin Flon-Mandy, Map 1087A, 1 inch to 1000 feet; Geological Survey of Canada, Ottawa.

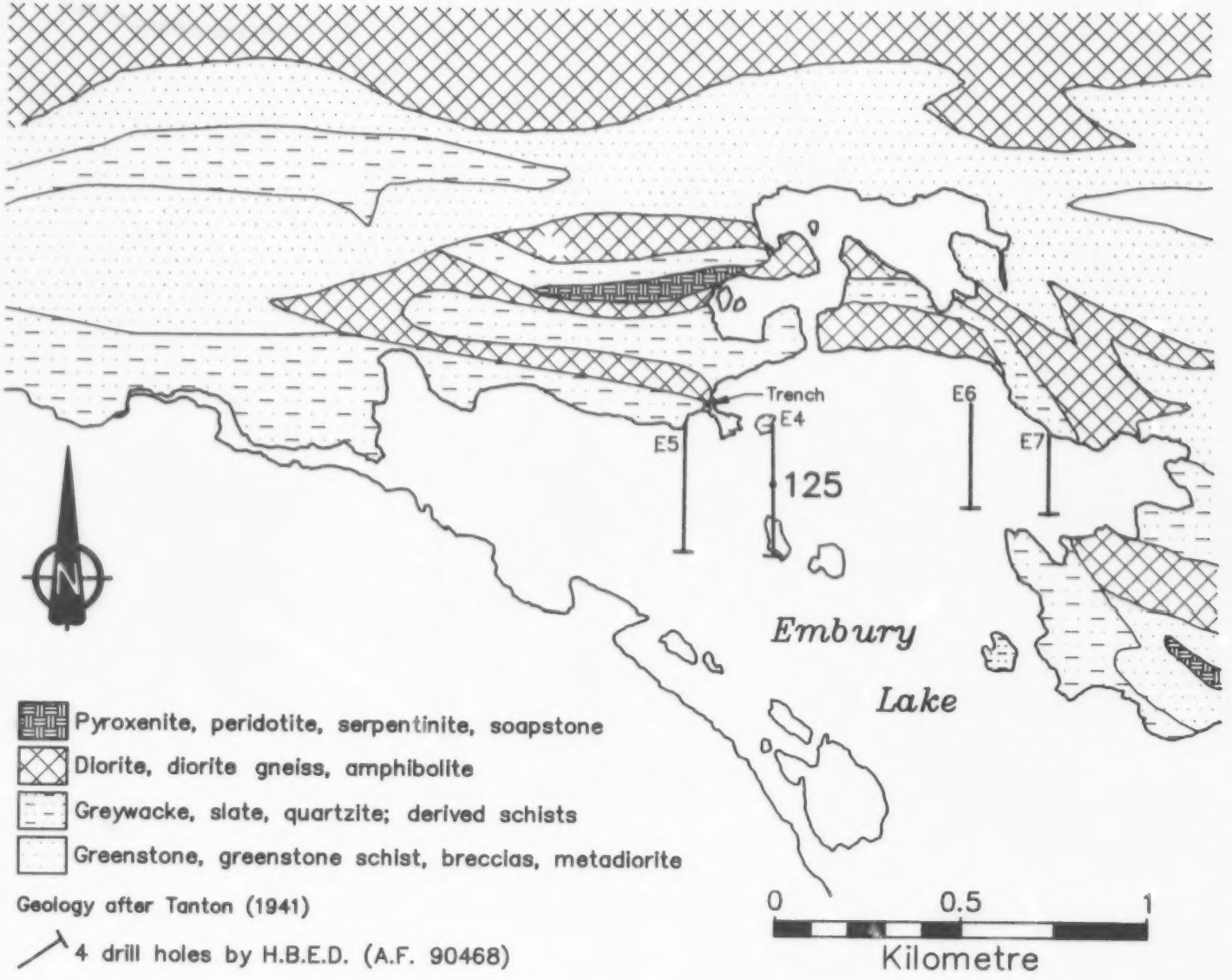


Figure 125–1: Geological setting of occurrence #125 (63K/13SW).

LOCATION: 125 NAME:
UTM: 6060510N/317412E AREA: North shore of Embury Lake. AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

Stanmac Ltd. drilled four holes for a total of 1598 m on the Last claim group in 1948.

GEOLOGICAL SETTING:

The area is underlain by sheared greywacke, intermediate to mafic volcanic rocks and mafic intrusive rocks (Tanton, 1941). Greywacke, various chloritic and sericitic schists, andesitic and dacitic rock types were recorded in the drill logs. Notations of graphitic schists with disseminated pyrite are common throughout the drill logs.

MINERALIZATION:

Layers of solid pyrrhotite, up to 4.3 m thick, were intersected in drill holes E4, E5 and E6. Numerous layers of disseminated to solid graphite were also present in these cores. Trace chalcopyrite was noted in some of the solid pyrite-pyrrhotite and pyrite-graphite layers. An occurrence exposed in a 4 x 3 m trench immediately north of drill hole E5 contains trace pyrite in rusty weathering quartz sericite schists at the margin of a hornblende-feldspar dyke.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

The graphite-pyrite intersections represent sulphide strata. The pyrrhotite intersections in holes E4, E5 and E6 could be part of a massive sulphide deposit since there are abundant chloritic and sericitic schists with disseminated pyrite and/or pyrrhotite (alteration ?). The sulphides exposed in the trench on the shore north of hole E5 are mobilizate.

REFERENCES:

Assessment Files 90468, 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

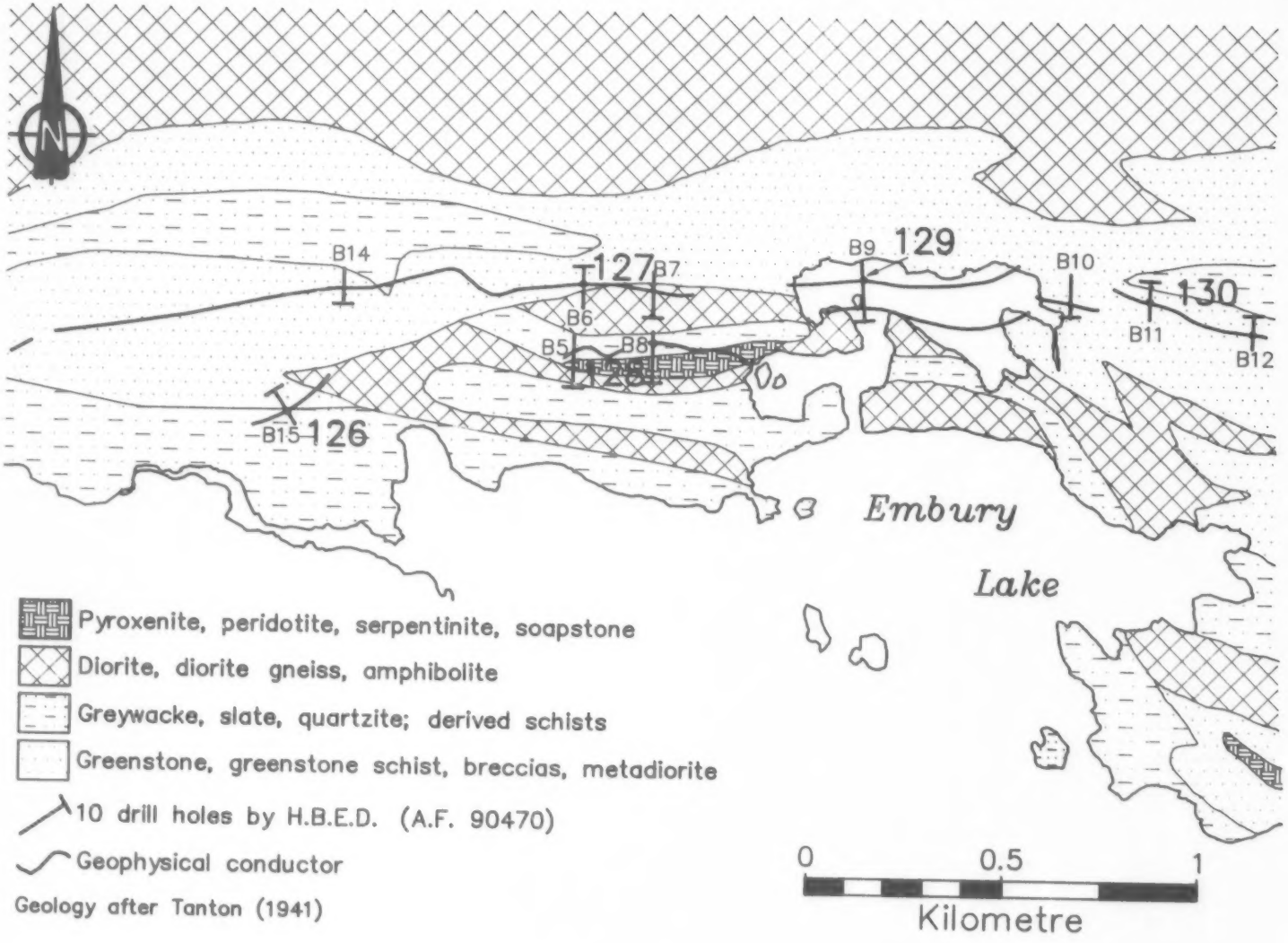


Figure 126–1: Geological setting of occurrences 126, 127, 128, 129, and 130 (63K/13SW).

LOCATION: 126
UTM: 6080918N/316031E

NAME:
AREA: North end of Embury Lake.

AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

An E.M. survey conducted in 1951 identified a short conductor. A 93 m hole was drilled in 1953 by H.B.E.D.

GEOLOGICAL SETTING:

The area is underlain mainly by metasedimentary and mafic volcanic rocks (Tanton, 1941). In addition, the drill hole intersected chloritic, sericitic, graphitic and talcose schists and hornblende-bearing schists.

MINERALIZATION:

Minor to disseminated pyrite and/or pyrrhotite were found in graphitic schists layers 45 cm and 120 cm thick.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formation.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 127 NAME:
UTM: 6081263N/316788E AREA: North end of Embury Lake (Fig. 126-1). AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

An E.M. survey conducted by H.B.E.D. in 1951. Three holes, B6, B7 and B14, were drilled for a total of 375 m on a conductor that extends for several km.

GEOLOGICAL SETTING:

Area is underlain mainly by mafic volcanic rocks (Tanton, 1941). The drill holes intersected greywacke, conglomerate, quartzite, quartz-porphyry, talc schist, chloritic schist and graphitic schist.

MINERALIZATION:

Three disseminated pyrite layers in graphitic schists were intersected over a core length of 2.5 m; the thickest was less than a metre thick.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formations.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 128 NAME:
UTM: 6081125N/316969E AREA: North end of Embury Lake (Fig. 126-1). AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

An E.M. survey conducted by H.B.E.D. in 1951. Two holes were drilled (347 m in total) on a short strike length anomaly.

GEOLOGICAL SETTING:

Area shown to be underlain by metasedimentary rocks, mafic and ultramafic intrusions by Tanton (1941). Abundant graphitic schist, greywacke, minor quartzite, quartz porphyry and talcose chloritic schists found in the drill cores B5 and B8.

MINERALIZATION:

Both drill holes intersected 15 cm sections of solid pyrite in quartzite. Hole B8 contained 5.8 m of disseminated pyrite and pyrrhotite in sheared quartzite and several layers of this same material were found in Hole B5. Both drill cores contain many layers of graphitic schist with disseminated pyrrhotite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formations.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 129 NAME:
UTM: 6081290N/317554E AREA: North end of Embury Lake (Fig. 126-1). AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

An E.M. survey conducted by H.B.E.D. in 1951. Drill hole B9 intersected two conductors under the lake.

GEOLOGICAL SETTING:

Area shown to be underlain by mafic volcanic rocks and a mafic intrusion (Tanton, 1941). The drill hole intersected mainly greywacke, graphitic schist, and chloritic schist and minor quartzite, quartz, sericite schist and diorite.

MINERALIZATION:

A 4.5 m section of sheared quartzite and quartz porphyry contains minor to disseminated pyrite. Graphitic schist layers up to 2 m thick contain minor to disseminated pyrite.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

Sulphide facies iron formation? The sheared quartzite intersections here and at locality 128 should be investigated as host for gold mineralization.

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

LOCATION: 130 NAME:
UTM: 6081177N/318336E AREA: North end of Embury Lake (Fig. 126-1). AIRPHOTO: A26364-81

ACCESS:

Via Trout Lake Mine road and boat on Embury Lake.

EXPLORATION SUMMARY:

E.M. survey of the Pot claims in 1951 revealed two conductors on the Pot 116 and 117 claims. These drill holes, totalling 445 m, were drilled to test the conductors.

GEOLOGICAL SETTING:

The area is shown by Tanton (1941) to be underlain by mafic volcanic and metasedimentary rocks. Greywacke and graphitic schists were the most common rock types intersected in the drill holes.

MINERALIZATION:

A 30 cm and a 20 cm section of near solid 'secondary' pyrite were intersected in hole B12. Short sections (20 cm, 15 cm, 30 cm and 45 cm in length) of quartz and pyrite were found in drill core B10. Graphitic schists with minor to disseminated pyrite occur throughout all three drill cores; hole B11 intersected one section that was 10 m thick.

GEOCHEMICAL DATA:

None.

CLASSIFICATION:

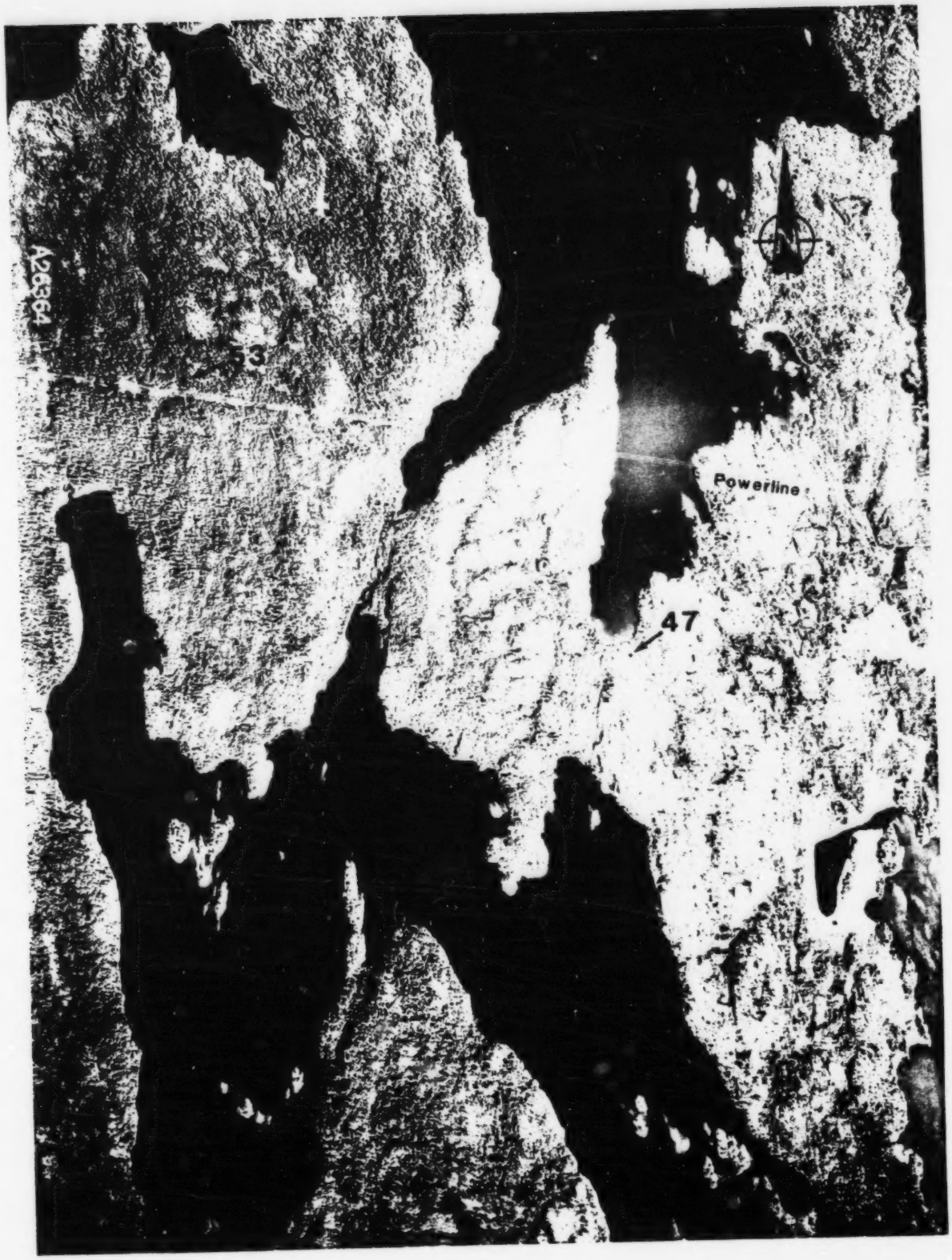
Sulphide facies iron formation and quartz veins with minor pyrite. The 'secondary' pyrite recorded in the drill logs could be either sulphide mobilizate or massive sulphide deposit type pyrite (?).

REFERENCES:

Assessment File 90470
Manitoba Energy and Mines, Minerals Division.

Tanton, T.L.
1941: Flin Flon, Map 632A, one inch to one mile; Geological Survey of Canada, Ottawa.

APPENDIX A
AIRPHOTO LOCATIONS OF OCCURRENCES
(LOCATIONS 38, 47, 53 AND 61)


A2836A
53
Powerline
47

MAPS
NOT
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CARTES
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